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ORIGINAL ARTICLES.

AN UNUSUAL CASE OF SUB-SEROUS FIBROUS TUMOR.[1]

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It is not my intention, in the subjoined report, to disclose either a new therapeutic agent or an improved method of employing an old one, but simply to add a note to a procedure instituted by Hilderbrandt, and which already enjoys the sanction of our science. Without attempting a *résumé* of the literature of the subject, it is proper that I should state that the method has not met with universal favor, and it is partly for this reason that I venture to read the notes of a case of sub-serous fibrous tumors lately under my treatment.

Miss V. E. G., æt. 43 years, native of Louisana, of good social position, school teacher. Family history exceptionally clear. Personal health uninterrupted until about two years preceding my first visit. In the early part of 1882 the patient began to experience unaccustomed sensations, which soon developed into positive disorders, such as abdominal and pelvic pains, irritability of bladder and rectum, menorrhagia, leucorrhœa, etc. It was not until the early part of 1883 that she discovered anything unusual in the contour of the abdomen. The presence of two hard masses, one in the hypogastrium, and the other in the right inguinal region, excited her apprehension, and she consulted a physician. From that period until January, 1884, the tumors had grown with such rapidity that the abdominal cavity seemed filled to its utmost capacity. Not only were the viscera compressed and displaced, but the walls and integumentary tissues were so distended that she suffered almost constant pain. Both her attending and consulting physicians are prominent practitioners in Galveston, and I have no doubt that their management of her case is above criticism. A frank prognosis on their part, however, determined her to dismiss them, and employ other counsel. It was at this juncture that I was called, and from which period my notes date.

My first visit was made on January 27th, 1884, and I was impressed by the ex-sanguined face, anxious expression, rapid breathing, and feeble, unrhythmic pulse of my patient. Examination revealed an enormously distended abdomen, with skin so tight that it could not be pinched, and a hard, uneven surface. The uterus was decidedly retroverted, somewhat enlarged, and considerably below its normal plane. There were unmistakable evidences that pressure was impeding the functions of the bladder, kidneys, intestines, stomach, lungs and heart. Dyspnœa and irregular heart-action caused great distress. The stomach was so compromised that only small quantities of food could be ingested, and even they were followed by various dyspeptic phenomena; the bowels were evacuated with difficulty; sleep was disturbed; pressure upon the sacral plexus gave rise to sciatica, which at times was agonizing. The patient was confined to her room, and a considerable proportion of the time to her bed. Exhausting menorrhagia occurred every month. Measurements of the circumference of the trunk at the epigastric, umbilical and hypogastric regions yielded 50, 51 and 51½ inches respectively. From that date, January 10th, to Feb. 10th prox., there was an increase of ¼ inch for the first, ½ inch for the second, and ½ inch for the third region (adhering to the order in which they were first named).

On March 16th, thirty-five days after second and forty-nine after first measurements, there was a decrease of 4¼ inches for the epigastric, 4½ for the umbilical and 5 for the hypogastric regions. Amelioration of every symptom was marked. Patient took more food, with less discomfort; slept better; was comparatively free from pain; menorrhagia was less pronounced; was able to take a moderate amount of outdoor exercise, and, barring occasional hysterical paroxysms, has made uninterrupted progress.

April 1st, sixteen days since tape-line was last applied, shows a loss of 4 inches for the first, 4 for the second, and 3 for the third region, and patient much improved in every respect.

May 21st, fifty days, reveals a decline of 10 inches for the first, 9 for the second, and 8 for the third region. With the exception of a few small abscesses, resulting from hypodermic medication, patient expresses herself as feeling "quite well."

July 11th, fifty-one days, discloses a falling off of 5½ inches for the first, 4½ for the second and 4¾ for the third region. Patient feels so well that she enters upon a general round of visiting, returning calls made while she was confined to her room. On

[1] Read in the Section of Obstetrics and Gynecology, at the Thirty-sixth Annual Meeting of the American Association.

the 6th of October she resumed her occupation of teacher in the public schools in this city, and has only lost one day, and that on account of sore throat.

December 23d, ten months and twenty-seven days after my first treatment, measurements displayed a circumference of 24 inches against 50¼ for the epigastric, 30 against 51½ for the umbilical, and 30 instead of 52 for the hypogastric regions, exhibiting a difference of 26¼, 21½ and 22 inches respectively. As far as could be ascertained, every function of her economy was normal, including menstruation. Mensurations taken to-day, April 18th, gave a still further slight decrement.

The treatment of this patient can be briefly stated. Ergot hypodermically was the only directly curative agent employed, but it was carried far beyond the limit advised by Hilderbrandt and others. I began with the daily use of the stereotyped dose of three grains of Squibbs' solid extract, diluted with a little glycerine and warm water, and so continued it for ten days, when my patient's increasing distress seemed to justify the administration of a like quantity morning and evening. From the eleventh day I increased the dose one grain each day, until ten grains were given morning and night. Slight signs of ergotism appearing, I did not increase the quantity further, but continued it in that degree until April 1st (fifty-four days), when its evening exhibition was omitted. Ten grains daily at a single dose was maintained until May 21st (fifty-one days), when the great shrinkage of the tumors, and disappearance of painful symptoms, led me to extend the interval to every other day. This latter order was pursued until July 11 (fifty-one days), from which date to Dec. 23d, the quantity employed was reduced to five grains, and the interval increased to three days. As previously stated, Squibbs' solid extract was the preparation selected, and the quantity used was freshly diluted with warm water at the time of using it. Less irritation was produced by fresh aqueous solutions than by others, however compounded, when allowed to stand a few days. The points of puncture were not restricted to any particular region, but a considerable extent of the surfaces of the trunk, upper and lower extremities were utilized first and last. The needle was variously introduced—obliquely into the subcutaneous areolar tissue, and straight down into the muscular structure—without appreciable difference in result as regards local irritation. Occasional abscesses developed in spite of every precaution.

None of the distressing symptoms of ergotism manifested themselves during the progress of the treatment. No gangrenous tendencies, no spasmodic complications; neither were there troublesome headache or vertigo. Nervous phenomena and nausea were the only symptoms which could be attributed to ergot. Hysterical paroxysms, however, had annoyed her from the beginning of her illness, and were no doubt in large measure due to exhaustion and reflex disturbance. The most notable effect of the ergot was slowing of the cardiac rhythm. The supplementary treatment consisted of blood, nerve and digestive tonics, rigid attention to all the functions, carefully selected diet, well-regulated personal and house hygiene, and anodynes and hypnotics when indicated. I improvised an abdominal supporter, which the patient wore when she sat up or walked, and it afforded great relief to the pelvic viscera.

The patient visited the Exposition at New Orleans in the former part of January, during a very cold spell, and the combined influence of fatigue and chilliness gave a fresh impetus to the tumors; but within a month, under the same line of treatment already detailed, they had degenerated into insignificant, hardish masses. Five grains every four days is still employed. It cannot be urged that the rapid retrogression of these tumors is anywise the result of senile involution connected with the climacteric, for the patient had never suffered the slightest aberration of the menstrual function until menorrhagia was excited by these abnormal growths.

Galveston, Texas, April 20th, 1885.

AUTOPLASTY; THE CONSERVATIVE SPIRIT OF MODERN SURGERY.[1]

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The progress made in the science of medicine and surgery since the commencement of the present century has been wonderful indeed. The spirit of positivism and experimentation which characterizes our epoch, the generalization of clinical and practical studies, the great modern wars which have afforded such vast fields of observation, the most thorough knowledge of anatomy and physiology, and the immense improvement made in the physical and chemical sciences, satisfactorily explain the true and permanent advancement of medicine and surgery. Every day chemistry furnishes us with precise methods and new discoveries. The most wonderful and valuable of all has certainly been the discovery and generalization of anæsthesia, general and local, and particularly ether and chloroform, and the newly-discovered cocaine. These extraordinary agents, which have abolished pain, have permitted operations, such as ovariotomy, gastrotomy, the removal of internal tumors, and extensive autoplastic operations for restoration or creation of organs, which, without anæsthesia, would never have been dreamed of.

Mechanics also offers to surgery new and valuable resources, incessantly inventing and improvising instruments, apparatus, and physical appliances of all kinds. The use of India rubber, of solidified substances, such as plaster of Paris and silicate of potash, the introduction of metallic sutures and of the ecraseur, the application of the resources of optics and acoustics, which allow us to see and hear into the depths of organs, and finally, the application of electricity and galvano-caustic, are as many innovations, every one of which has marked an epoch of progress and advancement in science. Thanks to the means and resources we now possess, is it surprising that

[1] Read in the Section on Surgery and Anatomy at the Thirty-Sixth Annual Meeting of the American Medical Association.

Surgery should become more and more *conservative*, that it should tend towards easing without mutilation? The amputation of a limb, not less than the extraction of a tooth, is now looked upon as a last resource, a painful acknowledgment of impotency. The tendency is to save, to preserve. Unfortunately, there will always remain a great number of cases, in which the only resource will be the sacrifice of a limb or organ. Fortunate, in many instances, if we can save life at the cost of a mutilation!

The surgeon of to-day is certainly less inclined to cut, less inclined to heroic treatment, than formerly. Now science has progressed, and we have at our command means which our predecessors did not possess. Resections are being in many cases substituted for amputations, compression for ligation in the treatment of aneurism, the use of water, cold or hot, has in many cases, in ophthalmic and gynecologic practice, advantageously taken the place of caustics and irritants. More advanced hygiene, a better understood régime, surgical drainage and antiseptic dressings, the use of disinfectants and germicides, all these combine to enable us, in many cases, to save life without running the risks of dangerous surgical operations.

The word autoplasty, or aroplasty, as preferred by Velpeau, is from a Greek word, signifying literally to reconstruct, to mould. Autoplasty constitutes certainly one of the greatest triumphs of modern conservative surgery, for the autoplasty of the former ages applied only to the repair of the nose, as we shall see later, while it nowadays has created a special department of operative surgery. The perfection which plastic surgery, says Prof. Gross, has attained within the last twenty-five years is truly wonderful, and affords a striking evidence of the ingenuity, talent, and enterprise of the medical profession in different parts of the world. It has literally been a field of conquest, upon which have been achieved some of the proudest triumphs of the human mind in modern times. Like many other useful discoveries or applications of science, it has passed through succeeding periods of enthusiasm, indifference, and quasi-oblivion, until modern surgery has once more revived it and placed it on sound, philosophical, scientific principles.

Autoplasty proper is the art of restoring losses of substances or deformities caused by disease or injury, by means of tissue taken from the affected person itself. In a more extended sense, it may be said to be the art of organic restoration, including the attempts which have been made—successfully at times—to preserve organs partially or totally separated from the body, and the still more wonderful, but less authenticated, facts of separation or restoration of organs made by means of organic living material taken from another individual, man or animal. If so understood, the domain of autoplasty could be stretched very far, and one can readily understand to what humoristic and grotesque conclusions the consideration of the subject might lead. In this connection many facts, or so-called facts, might be here related which belong more properly to fiction and novel than reality. Many are familiar with the amusing story of Edmond About, entitled "A Notary's Nose." That story may not have been, after all, a pure invention of M. About, if we are to believe certain stories told by travellers in India, who assert that in that country the manufacturers of noses often employ the skin of the buttocks of slaves for the making of noses for grand personages who have had the misfortune to lose, judicially or otherwise, their olfactory organs. We know that cutting off the nose is a legal punishment often imposed in some of the countries of India. Dutrochet, among others, describes minutely the *modus operandi*. The nasal surgeon begins by beating well the region which is to furnish the needed material with a sort of cat-o'-nine-tails, in order to increase the suppleness and vascularity. He then cuts out a thick piece of skin, of proper size and shape, and secures it by means of sutures to the previously-denuded borders of the stump. When once prepared he carves out of that region a thick piece of skin of proper size and shape, and secures it by means of proper sutures to the borders of the remaining part of the nose, which has been previously well denuded.

I do not guarantee the authenticity of those various plastic operations, which, no doubt, are to be accepted *cum grano salis*. I may say, however, that, considering the question in its purely anatomical and physiological aspect, the fact of restoration of organs in an individual by skin-grafting from another individual of the same race and species is not inadmissible, especially if connection between the two is not severed until the borrowed tissues have contracted adhesion with the region borrowing them. Reliable authorities give examples of still more extraordinary plastic adhesions. Science possesses many observations of complexed organs, of some considerable volume, such as a nose, a lip, a part of the chin, the end of a finger, which, after being entirely separated from the body, were reapplied, properly secured, and engrafted perfectly well. We read in Boyer that, in a paroxysm of anger, a woman bites off the nose-end of her husband and spits it on the ground. A surgeon, who happens to pass by, picks it up, and, after washing it, applies it and sutures it with care. The nose-end united perfectly. In Heidelberg, where duels with the broadsword used to be, and are still, the order of the day among students, ablations of noses are quite frequent. Chelius reports several such cases in which he obtained perfect reunion of noses that had been cut off by the broadsword; and Dr. Hoffacker, the official surgeon of those students' duels, has related in the surgical annals of that University sixteen well-authenticated facts of the kind.

The knowledge of the phenomena of cicatrization of wounds and injuries, and of the repairing of losses of substance which take place under our daily clinical observation, gives a satisfactory explanation of the phenomena of autoplasty. The margins of a wound made by a cutting instrument, if placed in juxtaposition, will adhere and unite together completely. The skin of any region of the body, if properly denuded, will unite intimately with that of any other region. These reunions and adhesions

are due to effusion of plastic lymph, which becomes vascular and soon establishes a community of circulation between the parts. Why could not these adhesions take place between individuals of the same species? Do they not happen at times in the pregnant womb? Do we not sometimes see twins united by fusion of organs, or by simple integumentary adhesions?

Experiments made on living animals confirm and enlighten the teachings of the clinique. Odin, of Lyons, was the first to obtain true animal graftings. You know of his interesting studies on the periosteum, and of his remarkable sub-periosteal operations. Among other experiments, he implanted pieces of periosteum, tails of rats, etc., in the crests of roosters, and saw them take root and develop.

We all know that skin grafting in the cicatrization of extensive burns and injuries is daily practised, and gives excellent results.

Autoplasty had undoubtedly its origin in India, where it has been practised from time immemorial. The barbarous custom of the judicial amputation of noses, above referred to, must have given rise to the art of making noses, or rhinoplasty, which was most likely the first plastic operation performed on man. It seems that the number of mutilated noses soon became so great as to give rise to a new industry, and created a special class of practitioners, that of the nasifer. Certain Indian tribes, the Kumas, whose fame has reached our days, displayed wonderful talent in the art of rhinoplasty. They invented the Indian method, which takes the necessary flaps from the tissues surrounding the loss of substance, twisting the pedicles to better adapt them *in situ*—autoplasty by torsion.

The Bianca family, of Sicily, father and sons, were the first to perform rhinoplasty in Europe. It was Tagliacozzi, an Italian surgeon, who indicated the scientific principle of this new operation. He operated many times himself, and created the Italian method, which takes the necessary tissue for reparation of losses of substance from distant regions—for instance, from the anterior part of the arm in rhinoplasty. The first successful plastic operation in Europe attained universal applause and admiration, and procured to Tagliacozzi the honor of having his statue erected in the Anatomical Amphitheatre of Bologna. Notwithstanding these successes, which, at times, seems inherent to all new discoveries, autoplasty soon fell into disuse and oblivion, and was condemned by most authors until the year 1815, at which time it was revived, and once more put in vogue, by Caspar, of London. Since that time, Dupuytren, Lisfranc, Blondin, Jobert, Liston, Gräfe, and Dieffenbach, in Europe, and Pancoast, Warren, Prince and Buck, of this country, have published their successful cases, and introduced in the operative procedure many useful modifications. Let us here mention an extraordinary example of courage and perseverance of both patient and surgeon. Roan, of Paris, is said to have performed fifteen distinct plastic operations on the same patient, for remedying an awful deformity. It is hardly necessary to add that the patient was a young woman.

The above-named surgeons were the inventors of the procedure *par glissement*, or French method, which dissects the needed flaps from the environing region, and causes them to *slide* and spread, without torsion, so as to cover the loss of substance.

Autoplasty applies especially to the repairing of noses, lips, cheeks, ears and eyelids, to vicious cicatrices, to the keeping open of natural orifices which tend to obliterate and closing certain pathological openings, such as fistulæ, etc.

The first conditions of success are that the subject be young and healthy; that the plastic flaps be taken from a sound vascular region; that they may be of a certain thickness and well nourished, in order that they may retain proper circulation and innervation with the parts furnishing them; that these flaps be neither too large or too narrow, and that the parts which are to be united be previously properly denuded, and then kept in exact contact by their bleeding surfaces. The great danger in the operation is sloughing or mortification of the flaps, which the above-enumerated conditions are intended to prevent. As to the results of the operation, they are generally useful, and at times most satisfactory and remarkable, as in the two following cases:

A few years ago I was consulted by Miss Corinne M., aged 18 years, from Attakapas. She was suffering from a deformity of the face, which caused her excessive mental suffering and made her life a burden to her. I heard from her parents that when she was 8 or 9 years old, the child was affected with some kind of terrible fever, during which gangrenosis had supervened, and in spite of all treatment had produced the monstrous deformity for which they now claimed the resources of the surgeon. The whole of the left cheek, together with two-thirds of the lower lip, had been entirely destroyed by the sloughing process, and had entirely disappeared; the left commissure of the upper lip was drawn up obliquely by adhesions. Instead of the soft tissues of cheek and lip covering the maxilla bones, there existed a deep hollow, nothing but fibrous adhesion and cicatricial tissue covering the surface of the two left maxilla; there had been, evidently, in several spots and especially along the alveolar processes destruction and loss of osseous substance; dense fibrous adhesions existed between the two maxilla bones, which prevented their separation, so that what remained of the mouth could be opened scarcely wide enough to admit the end of the finger; all the teeth had not been destroyed; there were eight of them still firmly implanted in the alveolar ridge; they were of extraordinary size and shape, and projected almost horizontally, resembling the tusks of a wild boar. Food reduced to pulp had to be introduced in the mouth with the fingers, in the spaces existing between the teeth; there was scarcely a perceptible lowering of the chin in the act of mastication, which was accomplished with difficulty by simple lateral or side motion. There was naturally great trouble in sucking, drinking, swallowing, and articulation of sounds; the voice was deep, hollow and hoarse, and her speech could only be heard with difficulty. The poor girl habitually wrote on a slate to convey her thoughts.

The right side of her face presented a striking contrast with the afflicted side, the right cheek being round, firm, and of beautiful complexion. The eyes were lovely and intelligent; the head well shaped and covered with an abundant growth of beautiful black hair. The general health was excellent, and with the exception of that horrible deformity the patient presented all the appearance of robust health, of medium size, fair and plump. After having minutely and repeatedly examined and studied the multiple lesions just described, after some hesitation, quite natural under the circumstances, I explained to the family and to the young girl the dangers and difficulties of the long and difficult operation, which alone might possibly correct such a deformity, and for which I could find no precedent in surgical works. Without disguising any of the obstacles we had to encounter, I held up to the imagination of the poor victim the brilliant prospect of a complete success. She was willing and anxious to take the risk of an operation.

A few days after, on the 22d of March, 1871, with the assistance of my friends, Drs. Trudeau, Sauvé, Taney, and Castellanos, and in presence of several friends of the family, I proceeded to perform the following operation of autoplasty *par glissement*, which, after complete anæsthesia with chloroform, consisted: 1st, In extracting the projecting teeth; 2d, In detaching and dissecting the remaining tissue around the gap produced by such loss of substance, upwards nearly to the lower orbital wall, forward to the nasal bone, and backward to the left ear. The fibrous adhesions which united the two maxillary bones, as well as the margin itself, or border of the alveolar process, in both maxillary bones, were carefully removed, detached, or scraped, by the bistouri gouge and chisel, so that the two maxilla could now be well separated, the tempora maxillary articulation being intact.

The complete detachment or dissection of tissues above, forward, and backward, would have scarcely covered one-third of the ugly gap. My main reliance was in the formation of a thick, well nourished flap, well quilted with adipose and cellular tissue, cut out of the left antero-lateral region of the neck. In making that flap, dissection was carried downwards to two inches from the clavicle. What remained of the lower lip, a small ball of flesh of the size of an egg hanging over the chin was utilized to best advantage, its mucous surface, which was greatly in excess over the cutaneous, was used as a buccal border to be accurately stitched to part of the upper border of the lower or neck flap. It was only after having ascertained by repeated trials and measurements that there was sufficient tissue to cover abundantly the gap in the face, that all these flaps were brought together, but not before all hæmorrhage had ceased. This was of a trifling nature, no large vessels having been cut during the operation.

Sutures with silver thread and fine silk were applied with extreme care, not less than fifty stitches being necessary to accurately close the large hiatus. The operation, including the suture and dressing, lasted two hours and twenty minutes. In autoplastic operations, under chloroform especially, the precept "*Cito*" finds no application. We should above all proceed slowly and unhurriedly, with geometrical precision. It is a delicate operation, which has particularly but justly been compared to miniature painting, it must be well *finished*.

For eight days the head was kept inclined forwards by means of a special cap and bandage, the patient being watched day and night to avoid all movement, all drawing on the flaps. No local application except compresses dipped in cold water. Milk diet. No untoward complications supervened. The threads and sutures were gradually removed between the eighth and fifteenth days. On the fifteenth day she got out of bed. The results surpassed by far our most sanguine expectations. Miss M. C. now had a human face. Perfect reunion had taken place in all the lines of cicatrization. One single sitting, one operation had been sufficient to obtain a most wonderful result, while at times ten and fifteen plastic operations have been necessary for a satisfactory result.

A month after the operation the patient returned to her home in Attakapas, scarcely recognizable to her best friends. Six months after she wrote to me: "I am perfectly happy. I can eat, drink, speak and sing as well as anybody, and I am soon to be married." Miss M. C. is to-day living at Port Brown, a happy wife and mother. She has certainly well deserved her happiness.

My second case is less complicated. It is simply a case of rhinoplasty. It was performed a few weeks ago in New Orleans, with the assistance of Drs. Ayres and Underhill. Mrs. B., living in the third district, was one of the many victims of a quack, or cancer doctor, living in that part of the city. She consulted him very foolishly, as some even more enlightened and aristocratic people will often do, for a small pimple, a trifling one, probably, on her nose. She was, at the time, and is to-day a splendid specimen of health and vigor, the mother of several fine, healthy children. Her pimple, she says, was of the size of a small pea, and caused no pain; it did not bleed, only it was annoying to her. Some unknown violent caustic was injudiciously applied to it, and the result was that a few days after, when the eschar fell off, there remained a hole in the middle of the nose sufficiently large to admit the first phalanx of my thumb; the skin, cartilage and part of nasal bones had been destroyed, and the tip of the nose, unsupported above, was perfectly loose and movable in any direction. The Schneiderian membrane was highly inflamed in spite of the patients efforts to protect it from wind and dust. The sense of smell was entirely lost. Such was her condition when she came to me a year after the cauterization. With the exception of the root of the nose, which was covered with cicatricial tissue extending towards the forehead, the adjoining tissues were healthy, the cheeks full and plump. In deciding upon the mode of operation, we concluded to make two thick lateral flaps from the cheeks to bridge over the large opening, operation *par glissement*. The patient being completely under the influence of chloroform, the borders around the loss of substance, particularly the

loose extremity of the nose, were well denuded, and two thick, well-nourished lateral flaps, one inch and a half long, and of the width of the hiatus, were dissected from the cheek on both sides. Two small arteries were twisted, and the flaps were accurately drawn over and applied to each other, in the median line, and to the denuded tissues above and below. Fourteen silver sutures were used. Reunion by first intention took place, and the result of the operation was perfect.

I should here remark that the climate of Louisiana is most favorable to the success of autoplastic operations, and to surgical operations in general. We but very seldom have here erysipelas, gangrene, or pyæmia following the most serious operation, and union by first intention, after amputation of limbs or of the breast, with or without antiseptic dressings, are far from being unfrequent. I have had several cases in my own practice. Our climate has some analogy with that of Lower Egypt, where operations are remarkably successful. A warm, damp atmosphere, resembling that of a hot-house, is favorable to vegetation. Why should it not be so to animal growth, to cicatrization, to repairing of tissue?

Louisiana now boasts of comparatively the largest number of Cæsarean operations, and when the results of the ovariotomies, performed in this State, will have been published, they will be found to compare favorably with the most favorable of any other country in Europe or America.

PENETRATING PISTOL-SHOT WOUND OF ABDOMEN —LAPAROTOMY—SUTURE OF INTESTINES— PELVIC HEMATOMA—RECOVERY.

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Notwithstanding the manifest soundness of the arguments in favor of operative interference in case of penetrating wounds of the abdomen, the weight of modern authority as indicated in the surgical text books is still against it, and it is only by the reports of cases where an actual test is made upon the human subject that the truth will ultimately prevail. The careful and conscientious experiments of Parkes upon dogs, while carrying conviction to the minds of many, are yet met by the masses with the objection so quaintly urged by Turner,[1] that "the comparative anatomy is not a sufficient foundation for us to go upon, in taking experiments thence, cat's guts and man's being so widely different in their texture. We have many instances of these parts wounded in brute creatures, and after sewing up again, they have been let go to lick themselves whole on the outside, while nature is playing the surgeon within. Nay, Dr. Musgrove acquaints us that he took out the coecum of a bitch, carefully tying up the vessels and stitching up the divided parts, when in three weeks time she seemed as well as ever."

To the case recently reported by Dr. Bull, of New York, I now add the following:

[1]Turner, Daniel. "The Art of Surgery." London, 1741. Vol. II.

J. W. Wood, a mulatto, æt. 19, a waiter at the Tremont House in this city, was accidentally shot by a pistol carrying a 32 calibre ball. The wound was received at 2.10 P.M., and he was taken to the Providence Hospital. There was considerable shock. I examined him at 4:20 P.M. and found that the missile had entered the skin about an inch to the right, and an inch above the navel. A flexible Nélaton probe following the track of the ball passed downward and inward under the rectus muscle and entered the abdominal cavity. The probe was withdrawn and the patient etherized. There were present Surgeon J. C. McKee, U. S. Army; Surgeon G. W. Stoner, Marine Hospital service; and Dr. D. P. Hickling, the House physician. The belly having been shaved, and washed with solution of bichloride mercury, an incision was made in the linea alba about six inches long, the peritoneum raised and incised. A spurting artery was seen in the mesentery, and the abdominal cavity was full of blood. The artery was immediately tied with a fine catgut ligature, the intestines drawn out loop by loop, and the wounds stitched with Lembert's suture as fast as they could be reached. Eleven wounds requiring suture were found in the small intestine, and two in the ascending colon. The wounds varied in size from a mere nick in the wall of the intestine, to those where the ball had passed directly through it, and all were everted, the mucus surface pointing out.

There was no fæcal extravasation, doubtless owing to the fact that less than two hours had elapsed from the time of receipt of the injury, but a canteloupe seed was seen and removed from the mesentery. The omentum was cut by the ball in several places, and as it was difficult to stop the oozing, a ligature was placed around the wounded mass and it was cut off. All sutures and ligatures used were the finest size of carbolized catgut. The abdominal cavity was then sponged with solution of bichloride of mercury, cleaned and dried, and the incision carefully closed with deep sutures of silver wire and superficial ones of silk. Narrow strips of adhesive plaster were then placed across the incision about an inch apart, a square of sublimated gauze laid upon it, and iodoform dusted over the gauze and the surface round about. A broad flannel bandage was then placed snugly over the abdomen, the patient placed in bed, and as there was still some shock from the combined effects of the anæsthetic and the wound, he was surrounded with bottles of hot water. Reaction took place shortly, and he was given .06 gm. of opium every three hours.

Sunday, July 12, 8 A.M.—Temperature 100.2° F., pulse 112, respiration 20. 6 P.M., temp. 100.8, pulse 130, resp. 24. General condition good, and had slept several hours during the day. Diet confined to beef tea.

Monday, July 13, 8 A.M.—Temp. 101.6, pulse 112, resp. 20. Patient restless, complained of pain in wound, and in right testicle. There was much tenesmus, and a gentle effort was made to administer an enema, but the small quantity of water thrown in was without effect. The frequency of the opium was then increased to .06 gm. every two hours. The

abdomen was moderately distended. A lotion of lead and opium was applied to the painful testicle.

Tuesday, July 14, 8 A.M.—Temp. 101.4, pulse 112, resp. 20; 6 P.M., temp. 100.8, pulse 112, resp. 20. The distension of abdomen increased. The patient was very restless, and complained of a throbbing pain in the wound. A rubber water coil was applied during the day, and at 6:30 P.M. the lower portion of the wound was re-opened, and by suction with a syringe it was sought to ascertain whether pus was present or not. None was found, and after injecting the wound with the mercuric solution, it was again drawn together. The opium was then increased to .06 gm. every hour. Tympanites troublesome.

Wednesday, July 15, 8 A.M.—Temp. 101, pulse 104, resp. 16. Patient slept some during the night, but very restless. Tympanites still a source of great discomfort. 6 P.M., temperature 103, pulse 124, resp. 28. Ether administered for the purpose of giving an enema; some fæcal matter came away. The opium was then reduced to .06 gm. every three hours, and sherry wine every four hours. A flax seed meal poultice was applied to the scrotum.

Thursday, July 16, 8 A.M.—Temp. 100.5, pulse 112, resp. 28. Patient had several stools during the night, had slept but little, was uneasy and the tympanites great. At 6 P.M. temperature 101.2, pulse 112, respiration 16.

Friday, July 17, 8 A.M.—Temp. 98.4, pulse 128, resp. 24. The patient had several stools during the night, which were exhausting and painful. To check the diarrhœal tendency gave

Quiniæ sulph. /90.
Tr. kino.
Syr. rhei aromat. āā 16/

M. et sig.—Teaspoonful every 3 hours. Chicken broth substituted for beef tea.

6 P. M.—Temp. 101.5, pulse 112, resp. 32. The tympanitis still great, and a rectal tube was introduced, without result.

℞ Ol. terebinth, 8/
Mucilaginis acaciæ 64/

M. et sig.—A teaspoonful every 4 hours. Opium discontinued.

Saturday, July 18, 8 A.M.—Temp. 101.2, pulse 112, resp. 24. Had five stools during the night, and the abdomen was quite free from tympanites. 5:30 P. M.—The patient had a convulsion lasting five minutes, and as there had been no operation from the bowels during the day the astringent mixture was stopped. Two silver sutures were removed and several silk ones. An exploring needle was introduced into the painful and swollen scrotum without result. 6 P.M.—Temp. 101, pulse 112, resp. 24.

Sunday, July 19, 8 A.M.—Temp. 100.6, pulse 112, resp. 24. Exploring needle again introduced into the scrotum without result, and at 2 P.M. six leeches applied. Milk and lime water added to diet, and as the diarrhœa had again set in, the astringent mixture was renewed. 6 P.M.—Temp. 100.8, pulse 100, resp. 40.

Monday, July 20, 8 A.M.—Temp. 100.2, pulse 100, resp. 24. No stool during night, but large quantities of flatus passed. The testicle still painful, fluctuation present, incision made, pus to the amount of 10 ounces evacuated, and the cavity washed out with the compound solution of bromine. At noon the patient was cold, and extremities bathed in clammy perspiration. He was sponged with hot mustard water. At 4:30 P. M., one small stool was passed, containing two lumbricoid worms. 6 P.M.—Temp. 100, pulse 100, resp. 28. At midnight, the coolness of extremities continuing, whisky 16 gm. was given every hour.

Tuesday, July 21, 8 A.M.—Temp. 99.8, pulse 92, resp. 28. Whisky stopped at 9 A.M. 4 P.M.—The patient had epistaxis. 6 P.M.—Temp. 100, pulse 104, resp. 24.

Wednesday, July 22, 8 A.M.—Temp. 99.6, pulse 90, resp. 24. 6 P.M.—Temp. 100.2, pulse 100, respiration 24.

Thursday, July 23, 8 A.M.— Temp. 99.6, pulse 88, resp. 24. Tongue furred. Ordered quinnæ sulph. .24 gm. three times daily. At 5 P.M., Dr. Hickling found the patient in great tenesmus, requiring bedpan constantly, only mucus passed the rectum, and an enema was ordered which returned about four ounces at a time. At 10 P.M., the tenesmus again coming on, the doctor made an examination and discovered a large tumor in the rectum pressing on the rectum. A hypodermic injection of morphia was given and the patient slept four hours, after which the pain returned, and while on the bedpan he passed the bullet.

Friday, July 24, 8 A.M.—Temp. 99.8, pulse 88, resp. 20. The patient's general condition was very good. I examined the tumor through the rectum and found it to be a pelvic hematoma. As the tumor seemed quite solid at its upper portion, I felt quite confident that nothing but its breaking down, would relieve the violent and almost constant tenesmus, so I passed a narrow bladed knife through the rectum in the median line, about two inches within the anus, directly into the tumor. There gushed out at once about a pint and a half of thin badly smelling blood, and as the patient seemed so weak I did not complete the operation by passing an instrument into the puncture and breaking down the clot. In a few minutes another fit of tenesmus came on, during which about the same quantity of badly smelling blood came out through the puncture, and I became anxious to control its flow as the patient was almost in syncope; a plug of lint was inserted in the rectum above the puncture, and the portion below filled with ice. Hypodermic injections of whisky with ammonia were administered. Hot beef tea given by the mouth, hot bottles placed around him, and the foot of the bed elevated. He revived and commenced to improve.

Saturday, July 25, 8 A.M.—Temp. 101, pulse 112, resp. 28. Patient still weak, the plug was removed from the rectum. Beef tea with milk punch every two hours. 6 P.M.—Temp. 100, pulse 112, resp. 24.

Sunday, July 26, 8 A.M.—Temp. 99.8, pulse 104, resp. 28. Passed a small amount of fæces during the night. The tumor could still be felt through the rectum, but only about one-third the original size.

From this time on the patient steadily progressed toward recovery. On the 1st of August the hematoma had entirely disappeared, and he was discharged well on the 8th of August, and on that day went by rail to his home, near Charlottesville, Va.

The record of this case, kept so accurately by Dr. Hickling, I have transcribed at the risk of being tedious, but I do so that one may be impressed with the incalculable care and patience required to successfully treat these cases. The conclusion of the operation was, as will be seen, by no means the end of the anxiety. In regard to the passage of the bullet, I had observed when sewing up the last wound in the colon that there was no counter opening, and as I could find no abrasion of the pelvic wall, nor of the iliac fossæ, I was forced to the conclusion that the bullet had remained in the bowel, I therefore gave orders that all fæcal discharges should be carefully examined, which was systematically done from the time of the first discharge until the passage of the bullet.

As the patient's recovery prevented an actual observation of the cause of the hematoma, I can, of course, only offer a conjecture, and that is that oozing continued from the mesentery, there was a large nick chipped out of the connective tissue next the small intestine in one place, which as the ball did not penetrate the intestine nor rupture an artery, I did not think it worth while to tie in mass. I now think the spot should have been touched with caustic or some styptic. The actual cautery could not have been used on account of the danger of penetrating the intestine. Had this cut received attention, it is possible that the pelvic hematoma with its attendant complications might have been avoided. This latter complication is scarcely mentioned in the surgical works, certainly not in connection with wounds of this character. Pelvic hematoma in the female, on the contrary, has a quite extensive literature, but I have not seen it prominently mentioned that its most aggravating feature is the pressure on the rectum accompanying it. It is not easy to thoroughly clean the abdominal cavity, where there has been considerable hemorrhage the surface of the bowels will be found smeared with blood, and the "toilet of the peritoneum" cannot be made with such perfection as it is possible to attain in ovariotomy, so that it is doubtful if the coming statistics of the operation will prove as favorable as in ovariotomy, but even with that disadvantage they will be vastly superior to the statistics of the wounds without operation.

LITERATURE.

The following opinions are interesting:

"But if the great intestines be wounded, and the excrements discharge that way, it may be reasonable to lay open the wound and stitch the gut with the glover's stitch, sprinkling it with some of the aforesaid agglutinatives, and, reducing it back, stitch up the external wound of the belly, as hath been said."—*Wiseman.*[1]

"But the question may be asked here whether a surgeon may not prudently, in this case, enlarge the wound of the abdomen, that he may be able to discover the injured intestine, and treat it in a proper manner. Truly I can see no objection to this practice, especially if we consider that upon the neglect of it certain death will follow, and that we are encouraged to make trial of it by the successes of others. Scacherus,[1] in Programmati Publica, Leipsig, ed. 1720, mentions a surgeon who performed this operation successfully."—*Heister.*[2]

"With very few exceptions, bullet wounds into the abdominal cavity are fatal. It may be a question worthy of serious thought, in view of the hopelessness of our present practice, whether we ought not to cut boldly into the abdominal cavity, wash out the filth, and, bringing the wounded intestines to the surface, endeavor to produce an artificial anus."—*Andrews.*[3]

"In examining the external wound, when no protrusion exists, should we find an escape of fæcal matter—which proves that the bowel has been perforated—the abdominal wound must be enlarged, and the wound in the intestine closed by suture. This is the only expedient for saving life, for if the contents of the bowel are allowed to escape into the peritoneal cavity, a fatal issue must be expected."—*Chisholm.*[4]

"Already interference contrasts favorably with the do-nothing system. Reflection upon the results of ovariotomy; upon the results of gastroraphy and enteroraphy, applied to protruded wounded viscera, leads unavoidably, in the writer's opinion, to a conviction of the propriety of incising the abdominal wall when necessary in order to expose and sew up the wounded gut concealed within the cavity, whether divided by a cutting instrument or shot. The obstacles to success are obvious, but it is a mortal peril which demands an extreme remedy."—*Otis.*[5]

"I have the deepest conviction that there is no more danger of a man's dying of a gunshot or other wound of the peritoneal cavity, properly treated, than there is of a woman's dying of an ovariotomy, properly performed. . . . . And, by the application of the same rules that guide us in ovariotomy to the treatment of gunshot wounds penetrating the abdominal cavity, there is every certainty of attaining the same success in these that we now boast of in ovariotomy."—*J. Marion Sims.*[6]

"When any of these conditions are present, the duty of the surgeon is clearly to enlarge the opening in the abdominal wall, or to make a new one in a more favorable location, sufficiently to admit of examination of the viscera in the track of the wound, to detect and ligate bleeding vessels, to suture intestinal rents, and to thoroughly cleanse the peritoneal cavity of extravasated matters."—*Pilcher.*[7]

"Primary abdominal section in the mid-line, gives the best command over the damage done, and furnishes the most feasible opening through which the proper surgical treatment of such damage can be instituted. Further, its adoption adds but little, if anything, to the peril of the injury."—*Parkes.*[8]

"I desire now to call attention to the fact that operative interference for gunshot wounds of the abdomen has been put to a practical test, and that it has been successful, and I hope that other members of this society may share my conviction that this plan of active treatment is now justified by these two successful cases, and that it should be adopted (within proper limits), to the exclusion of the 'let-alone policy.' "—*Bull.*[9]

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[1]Wiseman, "Of Wounds of the Belly," book 5, chap. viii. London, 1676.

[1]This was a mistake. The author was Friderici, who made an inaugural address before Scacherus (*Otis*).

[2]Heister Laurentius, Institutiones Chirurgicæ.

[3]"Record of Battles Fought near Vicksburg," page 34. Chicago. 1863.

[4]Chisholm, J. J., "A Manual of Military Surgery for the Use of Surgeons in the Confederate States Army." Richmond. 1862.

[5]"Medical and Surgical History, War of Rebellion," part 2, surgical volume, p. 128.

[6]British Medical Journal, Mar. 4, 1882.

[7]Pilcher, Lewis S., "The Treatment of Wounds," pp. 356-7. New York. 1883.

[8]Parkes, Chas. T., "Gunshot Wounds of the Small Intestines." Chicago. 1884.

[9]New York Medical Journal, Feb. 14th, 1885.

RUPTURE OF THE SPLEEN FROM A PHLEBOLITE, WITH CONSEQUENT DEATH.—UTERUS UNICORNIS.[1]

BY CHARLES F. DARNALL, M. D.,

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The subject of pathology being especially important to the physician, I take pleasure in contributing a mite to our accumulation of knowledge upon that topic; and it is done with the confession that wherever the writer has been wrong in his deductions and conclusions, it is for the reason that he has followed a rather obscure path, and not from the fact that the approval of others has been the incentive.

My subject, as indicated above, is the result of a *post-mortem* examination, and the conditions therein existing were so new, that they have been investigated and formulated with the belief that the presentation will excite at least a momentary interest.

I was called on the morning of January 30, 1885, to see a German woman, æt. 36, VI-para, who had been attacked at four o'clock that morning with sudden pain in the bowels, followed by shock and syncope. The pulse was 120, temperature 96° F., and respiration 30, with prolonged expiratory efforts and much general suffering. There was no history of malaria, typhus or typhoid fevers, or any of the dyserasiæ, nor of rheumatism or disease of the muscles or joints. She had never experienced any pulmonary or hepatic trouble; her nervous system had always been supposed to be in good condition, her menstrual periods easy and regular, without any ovarian or uterine difficulty. She had always occasional attacks of indigestion, unaccompanied with much pain, and her bowels were usually in a constipated condition. Her principal cause of sickness was in her kidneys, and her physician had treated her for "Bright's disease" a few months before her death. She was confined to her bed for several weeks with the supposed albuminuria, and only partially recovered. From her subsequent symptoms it is to be conjectured that she was afflicted with acute idiopathic cystitis. For a few weeks previous to the time when she was first seen, her physician, in treating her for her constipation, exhibited jalap, rhubarb, and other drastics, meeting with no success, as their effect was unable to correct her condition.

When she was first seen by the writer there was pain on pressure over the spleen and also in the right iliac region, and the omentum gave on palpation a peculiar brawny sensation, with no tympanitis or peritonitis. No absolute diagnosis being made other than that of a possible perforation of the bowel, an enema was ordered, with alcohol, quinine, and opium, hot poultices to the abdomen and dry heat to the extremities. Reaction did not follow, and death ensued on the morning of Feb. 2, three days afterwards.

Twelve hours later a *post-mortem* examination was held. The intestines were found empty, congested, and distended with gas. The omentum was injected, dry, and œdematous, with little serum or blood being present in the peritoneal cavity. The first thing that came to our notice was the half-filled bladder, the whole tissue of which seemed injected and hyperæmic. The uterus was found prolapsed, and the right ovary as large as a hen's egg, while the fimbriated extremity of the Fallopian tube was of a black, gangrenous condition, enlarged and infiltrated. The entire broad ligament was congested up to its attachment to the uterus. The ovary was opened, and discovered to be in a state of cystic degeneration, filled with clear albuminous liquid. Search was made for the left ovary, but it was entirely missing, as was also the round ligament, ovarian ligament, and usual blood-vessels, forming the anomaly known as *uterus unicornus*. The unilateral development characteristic of this rare condition of the uterus so far as the fundus pointing toward that side in which the ovary was present, was obliterated, being found in its highest state of perfection in the virgin; and as this woman had given birth to a child a few months before, the body of the uterus seemed not to have yet returned to that period of involution when this feature would be especially prominent.

The broad ligament was present, and between its folds was found the organ of Rosenmüller. As menstruation had taken place three weeks before death, the remaining ovary was further examined. A portion of it was found to be of normal tissue, full of Graafian vesicles, and *corpora lutea* in various stages of development and disappearance. The latter were of different sizes, lined with the duplicature of yellow granules of fat, and in the centre of one or two were blood clots. Surrounding them the tissue was of the natural type—not congested—and extended over upon the sides of the main cyst, showing it had sprung from one of them, and was of recent growth. Externally the walls of this cyst were of a white fibrous nature, internally of the peculiar bluish color common to ovarian tumors. The degeneration being multilocular, several very small cysts were in the parenchyma of the ovary, adjacent to the largest cyst, all filled with brownish or straw-colored liquids.

Proceeding in the search for the cause of death, the stomach was found to be in a rather congested state, the liver dark colored with spots of atrophy or contraction, and the kidneys injected, enlarged, and flabby. The spleen was atrophied, and upon the external surface near the superior edge we discovered a rent or laceration, large enough to admit the finger, from which exuded a small quantity of clotted blood. The solution of continuity was transverse to the length of the spleen, about two centimetres long, and in depth nearly three centimetres. Upon the internal surface was found what appeared to be a spot of fatty degeneration, as large as a silver dollar, covered by a tough yellow-covered serous membrane, which being opened gave vent to a discharge of lymph or detritus. The bottom of the laceration was contiguous to this diseased spot, there being only about a centimetre of tissue intervening. In making this cursory examination of the abdominal viscera, a glimpse was caught of a foreign substance laying among the folds of intestine, and our next discovery was this same body in Douglas's fossa, whence it had gravitated during our manipulations.

[1]Read before the Iowa State Medical Society, at Cedar Rapids, May 20, 1885.

This was of a hard nature like a renal calculus, nearly the size of a horse bean, curved on the flat, rough, no facets, and in weight about one gramme.

Naturally we linked together this concretion and the rupture in the spleen, but doubt being expressed that a calculus could come from a ductless gland, careful search was made of the intestines, gall-cyst, kidneys, and ureters, in the hope of finding an opening whence it could have escaped into the abdomen; but with no success. The rupture in the spleen was of such a nature as showed the spontaneous expulsion of the body, and upon a second search being made with the same result, the conclusion was forced upon us that this unpretending organ in the human economy was the *habitat* of the nodule, and that its presence, or rather its liberation, was the cause of rupture and death.

I have been unable to find on record such a thing as a *splenic* calculus, but our standard medical lexicographer (Dunglison) says in his definition of the word that a calculus may form in the substance of a body or organ, as the result of nutritive irritation, and be expelled spontaneously. Prof. Fitz says, in the new "American System of Medicine,"[1] that pathological deposits, in the form of calculi, occur in those organs which convey in canals their peculiar secretory fluids, and that these are formed of the predominating inorganic matter in them; as, for instance, a renal calculis in the pelvis of the kidney, which on analysis will be found to be composed of the urates of sodium, potassium, calcium, magnesium, or ammonium, or their phosphates or oxalates. The spleen having no duct, the question of this being a calculus is exploded and disposed of.

The next thought is of tuberculous origin, but we may differentiate that idea. There was no evidence of a tuberculous deposit in the mesentery, liver, or intestines, and where the abdominal cavity is invaded it is more apt to become general, and does not attack a small portion of one organ, leaving the balance of the viscera alone. Besides, the deposits are of the miliary type at first, small minute bodies, and in consistence are not hard like the one under consideration, but of a soft waxy nature, easily cut, and showing the presence of earthy deposit. They are never of such hardness as to cut out of a tissue spontaneously, making a free and clean incision. There *can* be tuberculous calcific degeneration, but the agglomeration of single tubercles and consequent calcification cause a mush or cheese-like substance to form, and never hard or stony, which excludes this thought, and we now turn to the next theory, which probably is more correct.

The question of concretion presents itself as a plausible one, when we understand that cretaceous degeneration may take place in any portion of the body. Calcification is a deposit of salts, previously held in solution in the blood, under abnormal circumstances, in and upon organic matter, as the result for instance of an inflammation. This inexplicable fact is well known, and Stricker says, in the "International Encyclopædia of Surgery,"[2] that "tissues have the property of depositing lime-salts. . . . As cartilage is converted into bone, it must deposite lime-salts in its basis-substance. But cartilage calcifies sometimes (as for example under the influence of slight inflammatory stimuli) without being converted into bone.

Of pathological calcifications of other tissues, too little is known beside the mere fact that they do occur, to warrant my considering them here." Fitz says further that concretions occur in the tissues of organs, and are collections of inorganic salts, chiefly the carbonate and phosphate of calcium, hence deposited through the agency of the blood. It is not necessary that these calcifications take place in the solid portion of an organ, for viens are often found with a concretion, or *phlebolite*, and this is the development of my investigation. That this is a concretion an analysis showed it to be carbonate of lime, while the laceration in the spleen terminated in the splenic vein, enlarged and dilated, into which the vein stone I present seemed to fit quite naturally.

The absolute cause of this strange foundation is of course speculative, but so far as a general review of literature has to do with forming an opinion, the preponderance is in favor of hemorrhagic infarction, according to Cohnheim,[1] or coagulation-necrosis, as it is termed by Ziegler.[2]

An embolus being arrested in a small artery, inducing extravasation and a secondary thrombus in the splenic vein in consequence, or a primary thrombus arising from a similar source in the vein, under went transformation, interfering with the necessary blood-supply of the surrounding area, and caused upon the surface of the spleen what Ziegler calls the "opaque yellowish-white conical patch." Guillebeau[3] endorses this opinion, saying that splenic infarcts are hemorrhagic, quickly becoming decolorized and degenerated. Green[4] says that infarcts are usually found in the spleen, wedge-shaped, with the apex of the cone toward the centre of the organ, rapidly undergoing softening and disintegration, by regurgitation from the veins into the capillaries

The theories of Rokitansky[5] regarding phlebolites is that they are caused by a retarded flow in the veins, coagulation and incrustation following, and that within the concretion is an irregular brownish fissure,—the clot, which is found within the one under consideration. He writes:[6] "We not unfrequently find the sheath of the spleen indurated and cartilaginous, or ossified, and at the same time ossification of the arterial ramifications and free calcareous concretions (Phlebolithes) in the veins of the organs." In *Medinische Encyclopädie* he says that in atrophy of the spleen as a result of perverted nutrition small concretions are found in the walls of veins, which are free and chalky. They show no symptoms and consequently are not amenable to treatment. Ziegler[7] says of petrifaction that the process is derived from the salts in the blood, not simply precipitated and retained, but formed as a solid compound. He mentions that large infarcts of the spleen are some-

[1]Vol. I, 1885, p. 89.
[2]Vol. I, 1881, p. 62.

[1]Ziegler's Path. Anat., Wood's Library, July 18, 1883, Art. 36.
[2]Ibid, Art. 36. [3]Ibid.
[4]Pathological Anatomy, Phila., 1881, p. 192.
[5]Path. Anatomy, Syd. Ed., Vol. IV, p. 356.
[6]Ibid, Vol. II, p. 167. [7]Op. Cit., Art. 64.

times imperfectly reabsorbed, so that the cicatrix incloses a necrotic caseous patch.

Ponfick attributes[1] the formation of these bodies to thrombi in the veins, but says it is an hypothesis. Delafield and Prudden say that the contents of an abscess of the spleen as the result of embolism may dry, shrink, and become calcified. Orth, in his "Lehrbuch der Pathologische Anatomie," states that phlebolites of the spleen are occasionally found, mentioning no case, and speaks of the frequency of degeneration of an infarct from embolism. He says they may become absorbed and contain lime-salts. Birch-Hirschfild[2] claims that phlebolites are occasionally found in the spleen, resulting in each case from calcification of the thrombus in enlarged veins.

Morgagni[3] records a case in which a phlebolite of the spleen was discovered, in an autopsy, weighing twenty-one drams. Bristowe[4] has found them in the spleen and various organs of the body, and attributes their presence as the result of an adherent blood clot, undergoing degeneration. Callender[5] calls them loose calculi, producing no inconvenience. Bichat[6] thought they occurred in veins wherein there was slow circulation. Hasse[7] found them in varicose veins, which also is Paget's theory.[8] Aitken[9] calls them products of petrifaction of blood-clots in enlarged veins. Quain[10] says they form from a clot in a vein, and are perfectly harmless. Gross[11] states that ten, twenty, or thirty phlebolites may be found in enlarged veins of the spleen and pelvic organs. Merbach[12] repeats that they are found in cirsoid or varicose veins, usually in the pelvis, composed of blood and inorganic matter Cruveilhier's[13] theory is that they are developed in a clot of blood. Druitt[14] in his surgery shows an illustration of a female who had several phlebolites in irregularly dilated veins under the lower jaw, which were removed with the knife.

The only other case I can find on record of a knowledge of their presence *ante mortem* is reported by Gould,[15] who found in a female patient a concretion over two inches long, laying in a dilated vein transversely across the tendon of the semitendinosis muscle in the popliteal space, and its formation he attributed to a thrombus. It was not removed. Wyeth[16] says that phlebolites are found in cutaneous venous tumors, and in opposition to what has been cited, says that the circulation is active. Our various works of surgery mention phlebolites, and the opinions are circumstantially as given above. I can find also that these concretions are found in hæmorrhoids, as well as in the external genital organs.

Nearly sixty cases of rupture of the spleen can be tabulated, so far as my study has gone, and about one-fourth occurred spontaneously after unusual muscular exertion, for instance after vomiting, straining at stool, or a sudden twist of the body. In all these cases the viscus had previously suffered from disease, as malaria typhus or typhoid fevers, or some malady resulting in softening of its tissue. Traumatic causes make up the other three-fourths, and are usually gunshot wounds, blows, and falls. Of all cases of rupture, none is recorded as being caused by a concretion, and as death in my patient undoubtedly ensued from rupture in consequence of liberation of the phlebolite induced by hard straining at stool, this is placed on record as perhaps the first case of the kind. In a communication from Surgeon-General Billings, librarian of the Army Medical Museum and Library, he says, "I have had our index references to rupture of the spleen examined. There are many cases of rupture of the spleen reported, but I have not found any due to or connected with a phlebolite."

The malformation of the uterus and appendages is another rarity, and want of time forbids a lengthy discussion of the condition. The text books all speak of *uterus unicornis*, but Tait[1] in his book says he has been able to find on record only one case of this singular development. This he credits to Chaussier as quoted by Busch.

[1]Path. Anat., p. 363. [2]Lehrbuch der Path. Anat., p. 140.
[3]Wardell, Reynold's Syst. of Med., Vol. III, p. 471.
[4]Bristowe, ibid, Vol. II, p. 883. [5]Holmes' Surg., q. v.
[6]Anat. Gén., par Béclard. [7]Vide Holmes, Art. by Callender.
[8]Lecture 29, p. 488. [9]Aitkin's Practice, Vol. I, p. 127.
[10]Quain, Dict. of Med.
[11]Gross' Surg., Vol. I, p. 817.
[12]Medinische Encyclopädie, Art. Milzkrankheiten.
[13]Vide Callender, op. cit. [14]Page 320.
[15]Phila. Medical News, Vol. XLIII, No. 9.
[16]International Enclycopædia of Surgery, Vol. III, p. 372.

THE TREATMENT OF DEEP-SEATED ABSCESSES ASSOCIATED WITH THE TEETH WITHOUT EXTERNAL INCISION.[2]

BY JOHN S. MARSHALL, M. D.,
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The subject of this paper is one in which I have taken great interest for a considerable time, and have been hoping that the day would come, when some means would be suggested whereby its attendant dangers might be lessened, and the need for the use of the knife in most cases, done away with.

By *deep-seated* abscesses I desire that you will understand me as referring to those cases of alveolar abscess, which have extended beyond the ordinary limits, and have involved more or less extensively the structure of the jaw, with a tendency to necrosis, or have penetrated the antrum of Highmore, or have escaped from the neighborhood of the maxilla, and have burrowed downwards between the muscles of the neck, as frequently occurs in abscesses associated with the inferior teeth.

Ordinarily the diagnosis of these cases is not difficult, but occasionally the cause of the disease has proved troublesome to find. Abscesses discharging into the antrum or the nasal fossa, and producing offensive discharges, have been diagnosed as chronic catarrh. One case occurring in the practice of Dr. Edward Maynard, of Washington, D. C., caused by an unerupted inferior wisdom tooth, and discharging into the larnyx, setting up irritative cough with expectoration of pus and mucus, was previously diagnosed by the physicians to be acute bronchitis; others discharging at some point upon the side of the neck, have been set down as abscesses originating in the cervical glands, the result of scrofula. That such

[1]Diseases of the Ovaries, N. Y., 1883, p. 36.
[2]Read before the Minnesota State Dental Society, Aug. 1st, 1885.

abscesses often prove to be serious affections, endangering the health and sometimes even the life of the individual, are well established facts. I propose however, in this short paper, to confine my remarks to the more common, and from their location, the more dangerous class of these cases, viz: those originating from diseases of the inferior teeth.

The tendency of the suppurative products in these cases, is downwards through the external wall of the alveolar process, and to point at the lower margin of the jaw; but it also happens—especially with the molar teeth—that instead of pointing at this location, it opens through the internal wall of the alveolar process, and burrows downwards between the muscles of the neck, and may discharge into the throat, or through the external tissues at various points from the submaxillary triangle, to the superior border of the clavicle. Any suggestions therefore, in regard to the treatment of these cases, which will tend to cut short the suppurative process, lessen the danger to health and life, avoid the necessity of operating with the scalpel in a location requiring such delicate dissections, and fraught with so much risk to the patient, or to prevent the unsightly and sometimes disgusting scars which follow the external opening of these abscesses, will, I think, be of interest.

The treatment generally adopted in cases of alveolar abscess, is the removal of the cause by the extraction of the offending tooth, and then usually trusting to nature to complete the cure. In extreme cases of this deep-seated variety, an incision is made through the external tissues at the lowest point of the abscess, for the purpose of drainage. In those cases, however, in which the pus has burrowed deeply into the tissues of the neck, it is quite likely that more than one pocket will be formed, consequently the treatment by incision becomes complicated, and sometimes from the dangers of an extended operation in the superior or inferior carotid triangles, would be precluded altogether. The surgeon, under such circumstances, has had no alternative but to wait, trusting that the abscess would find an opening for itself at less risk, before the patient should die of pyæmia. The treatment which is suggested comes to our relief in this emergency, and from past experience with it I am prepared to say, at least, that the duration of these cases can be materially shortened, and many of them speedily cured, without resort to any other operative procedure than the extraction of the diseased tooth, and the injection into the sac of peroxide of hydrogen. With the introduction to the profession of the peroxide of hydrogen, a valuable antiseptic and germicide has been placed in our hands. Ophthalmologists and aurists have found it very useful in the treatment of diseases of the eye and ear, with purulent and muco-purulent discharges, and dentists have been signally successful with it, in removing the putrid contents of the pulp chamber in devitalized teeth, in treating the ordinary alveolar abscesses, and phyorrhea alveolaris.

By injecting an abscess of this deep-seated variety with H_2O_2 introduced through the alveolus of the extracted tooth, the purulent contents can be thoroughly evacuated. The oxygen is set free on coming in contact with the products of decomposition, which distends the cavity and forces out the pus through the alveolus, by mechanical pressure. Two or three injections of ℥ss. to ℥j according to the extent of the abscess, may be required to completely remove the purulent matter, and if given opportunity, it will search out and purify every hidden receptacle. I have had several opportunities, since the introduction of H_2O_2 to the notice of dental surgeons by Dr. Walter Coffin, of England, at the London International Medical Congress in 1881 (Transactions of the Seventh International Medical Congress)—and to whom this credit is due—to test its efficiency in this class of cases, and in extensive periosteal inflammations of the jaws

In one case, a Mercy Hospital patient, Mary N., Irish, aged 24 years, suffering with a deep-seated abscess associated with the right inferior wisdom tooth, and which had been progressing for several weeks, and confining the patient to her bed for 26 days, with pulse ranging from 100 to 116 and temperature from 101° to 104.8°, was speedily relieved by extracting the tooth, and evacuating the pus—the abscess extending down the neck 4½ inches below the margin of the gum, as was ascertained by the probe—the pulse dropped from P. 104. T. 104.8° on the previous day, to P. 96, T. 103° two hours after the operation. H_2O_2 was ordered to be injected into the abscess ℥ss. every four hours; this was followed by a decrease in the temperature of one degree each day for three days. The patient then refused to submit to the further use of the remedy, as the evolution of the gas, by distending the sac, caused pain. This was immediately followed by an increase in the pulse rate, and an elevation in the temperature. On the fourth day afterwards they had reached P. 101; T. 104°.

H_2O_2 was again used as before, and the pulse and temperature again rapidly fell, but through the obstinacy of the patient, the treatment could not be carried out with any degree of satisfaction; still the fact was established that the peroxide of hydrogen, antisepticized the pus and evacuated the sac, as indicated in the rapid improvement of the symptoms.

Another case was that of a little girl aged 11 years, with an abscess originating from the right inferior first molar, and extending into the tissues of the neck, accompanied with extensive swelling and tenderness, but with no acute pain. The swelling of the parts had followed an attack of severe pain in the tooth and jaw, from which she had suffered three weeks previously. For a week, the jaws had been closed, and the only food taken each day, was a small quantity of milk. The child had been confined to the bed for a part of the time, and when presented for treatment, looked decidedly ill.

The tooth was extracted under ether, and the pus cavity found to extend downwards three inches below the margin of the gum. Very little purulent matter followed the extraction of the tooth, but on injecting the pocket with H_2O_2 large quantities were evacuated. The injections of H_2O_2 were continued once per diem for six days, when the patient was discharged cured. Under the ordinary treatment, I

should have expected this case to have continued for a much longer period, and perhaps to have seen it finally point at some location lower down the neck. Other cases, very much like this one in character, might be mentioned in proof of the value of this remedy.

One more however, might be related with profit:

This was a case of a lad 9 years of age, who had received a traumatic injury of the inferior jaw, by a fall from his bycycle, and which resulted in an extensive acute periostitis, involving the teeth and jaw, from the location of the second temporary molar of the left side, to the ramus of the jaw on the right side; all of the teeth between these points were loose; pus exuded from the gums at the necks of the teeth, and I feared extensive necrosis.

The treatment adopted was injections of $H_2 O_2$ beneath the gums at all points where pus was found to exude. The condition of the anterior part of the mouth began to improve at once, but opposite the first permanent molar, at the lower margin of the jaw, it was necessary a few days later to open an abscess which was about to point at that location. The injections were kept up for two weeks. All discharge had then ceased, the teeth had become firm, and the patient was discharged.

Dr. Harlan has recently called attention to the use of $H_2 O_2$ in purulent conditions affecting the maxillary sinus (*Archives of Dentistry*, p. 204, May, 1885), and I would suggest that it will be found equally valuable in the hands of the surgeon in nearly every variety of suppurative inflammation, especially in periostitis, necrosis and deep-seated abscesses, when there is difficulty in completely evacuating the purulent matter by the ordinary means.

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CITRIC ACID IN THE EXTIRPATION OF MALIGNANT TUMORS.

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OF SAN DIEGO, CAL.

Prior to the revelations of the microscope, morbid growths, with few exceptions, were looked upon as local manifestations of some blood dyscrasia. They were known to be environed by a zone of infiltration or degeneration, of varying area, and the question of recurrence after an operation was supposed to depend largely upon the extent of the incisions. The desire, however, to preserve symmetry, especially if about the face, and to hasten cicatrisation, frequently induced the surgeon to circumscribe his operative procedures, relying subsequently upon antiseptic applications to sterilize flaps and adjacent tissues. Unfortunately, it was seldom possible thus to reach the extreme boundaries of the disease, hidden as they were to sight, and the materies morbi, with lymphatics and blood-vessels as avenues (?), quickly invaded other tissues and viscera; or the increased supply of nutrient material, in the absence of the central mass, soon precipitated a recurrence at the original site. This process was all the more rapid after attempted extirpation by pastes and caustic lotions. Consequently the impression prevailed that surgical interference merely postponed the fatal denouement.

Cellular pathology, however, has modified some of these theories, while confirming others. It has taught us, I think, that tumors, excepting, perhaps, the essentially cancerous ones, are for the most part of local origin, whether homologous or heterologous as to the tissue from which they arise; that the drier ones are seldom recurrent, and that when metastotosis and recurrence take place, it is through the medium of morbid juices, which invade connective and other loose tissues, and set up foci of disease in other portions of the economy. These later investigations, in my opinion, should encourage the surgeon to attempt at least the radical extirpation of all kinds of tumors, though custom and classification may have placed some of them among the "*noli me tangere*" class.

While yet a student, some twenty years ago, it was my privilege to assist in the removal of a great many epitheliomatous and other abnormal growths, and the rapidity with which some of them recurred impressed me most forcibly at the time. In many instances plastic operations were successfully undertaken to conceal deformity and promote cicatrisation, but at a later period these only added fuel to the flames. In later years, having adopted the non-systemic theory, and recalling the well-known antagonism of citric acid to diseased tissue, while comparatively innocuous to healthy cells, I devised a method for the extirpation of doubtful and malignant tumors which I shall be glad to see thoroughly tested. It consists, as will be noted, in an attempt to segregate the degenerated zone before using the scalpel.

The notes of a few cases, of dates sufficiently remote to justify conclusion, will best illustrate the process:

Col. H. T. C., aged 48, of undoubtedly cancerous antecedents, his grandfather and father having succumbed to malignant disease of the face, had been appealing to thirty-third triturations for the removal of a suspicious tumor situated upon the left ala of the nose. Notwithstanding the *attenuations*, the disease had rapidly extended down the side of the nose until a large segment of it rested upon the cheek. Its track, fully an inch in length, and more than six lines in width, resembled the cicatrix of lupus exedens. When first examined by the writer the tumor, now larger than a filbert, had a sessile attachment, an encrusted summit, and, in addition to an indurated margin, was evidently exceedingly vascular. The elderly gentleman, remembering the fate of his ancestors, whose lives had scarcely been prolonged by the frequent operations to which they had been subjected, was naturally very despondent, and while decidedly opposed to the employment of caustics, he was correspondingly incredulous as to any permanent relief to be obtained from the knife.

At the outset my armamentarium included an old hypodermic syringe and a saturated solution of citric

acid. The needle was introduced deeply into the base of the growth, and about half a drachm of the solution injected. The entire mass became blanched at first, following which a few drops of the acid, mingled with blood, escaped at the surface. Beyond an insignificant tingling, the suffering was so slight that he voluntarily returned on the following day for a repetition of the operation. At intervals of two and five days the process was repeated, until a large zone had been thoroughly saturated with the solution. The size of the tumor gradually diminished until a nodule as large as a small pea alone remained. After the lapse of about three weeks this nucleus was raised upon a tenaculum and excised. The hæmorrhage, as had been anticipated, was quite profuse, but yielded readily to styptics and compression. During the entire period of manipulation, the local irritation seldom required restraining lotions. More than six years have already passed without any evidence of recurrence, and the colonel feels that he has made a fortunate escape.

A second case occurred in the person of a middle-aged matron, who also gave a history of a cancerous diathesis in her family. The tumor was situated between the eyes, and was slowly encroaching upon each of them. Immediate excision could not have been undertaken without leaving a most unsightly deformity. Subcutaneous injections of a similar kind were therefore used, the needle point being directed at times toward the centre of the mass, and, again, outwardly, in various directions. A diminution of the induration was soon perceptible to the touch at the periphery of the zone, and continued until an elliptical incision, having a horizontal diameter of not more than twelve lines, included the entire growth. Three years have now elapsed without a return of the disease.

Still another illustration of the vagaries of the cancer and the possibilities of this treatment may not be out of place here. A lady, of perhaps 40 years, stated that about two years previous to our interview, and without any assignable cause, a hard lump made its appearance, a little to the right of and below the right breast. It had been twice operated upon in a distant city, without removing the indurated mammary and axillary glands! After a brief interval of repose it had again come to the surface, and was now manifesting increased virulence. A fungoid mass, as large as the top of a tea-cup, occupied the original site, and was so painful that large doses or opiates only procured temporary relief. It was evident that the system was so saturated with the cancerous juices as to preclude further surgical interference. An operation promising even a temporary respite would have involved excision of the breast and axillary glands and an area of integument at least five inches in diameter. As in the other cases, citric acid was injected into the tumor and adjacent tissues, with the results that pain was mitigated, hæmorrhage somewhat restrained, besides other evidences of improvement. It was, of course, impossible to stay the progress of the malady by any course of treatment.

San Diego, Cal., July, 1885.

MEDICAL PROGRESS.

MATERIA MEDICA AND THERAPEUTICS.

PRESERVATION OF ALKALOIDAL SOLUTIONS.—Much has been said and written on this subject of late, and many have been the suggestions. In the British Pharmacopœia most of the alkaloid solutions are ordered to be preserved with rectified spirit in certain proportions, the solution of sulphate of atropia being an exception. There cannot be much objection to the use of this preservative when the medicines are intended for internal use *per os;* but when required for dropping into the eye, ear, or other delicately-lined part of the body, or for subcutaneous injection, the use of spirit then becomes objectionable, because of the smarting pain produced. Liquor atropiæ, B. P., is a notable example, as also the hypodermic injection of morphia. In place of spirit we have many useful substitutes, or means of avoiding this particular difficulty: 1. The use of neutral solutions of the alkaloids with tartaric, salicylic, and other organic acids; 2. The addition of phenol, thymol, salicylic acid, boracic acid, and such antiseptic substances in minute quantities; 3. The use of camphor-water, glycerine, etc., as the solvent. With regard to the first method, tartrate of morphia may be found a very useful salt for subcutaneous use, as it is readily soluble in water, keeps fairly well, and causes less irritation than the acetic solution. The same applies equally to atropia solution, but it may be mentioned that each of these does not keep for very long periods without the usual fungous formation. The second method may be objected to because of the powerful nature of the substances named, but there need be no fear, because a very small quantity suffices. The salicylates of the alkaloids are known to keep fairly well in solution, even when exposed to the air, and their effect in such a combination is not impaired. Apomorphia solution may contain a trace of phenol to preserve it. Cocaine solutions are said to be useless after two weeks if not preserved by means of some such preparation as a saturated solution of salicylic acid, and very likely this may account for the failure experienced by some practitioners in obtaining the "local anæsthesia" said to be produced so markedly by this recently much used article of materia medica. The third method may be employed with considerable advantage for solutions of atropia, and doubtless also for eseria, pilocarpia, duboisia and gelsemia, when they or their salts are easily soluble in this solvent. Glycerine dissolves some alkaloidal salts very readily, and when diluted with a little water, to thin the product a little, may serve well for hypodermic injection, the pain produced sometimes by the glycerine, especially when used hypodermically, being greatly mollified by the addition of the water. Another method recently recommended by Dr. Macnaughton Jones for the preservation of these solutions is based upon the supposition that light aids in bringing about these changes. He proposes the use of a glass bottle colored blue or yellow, and provided with a vulcanite air-tight stopper, flanged

with india-rubber, and having a little vulcanite pipette, surmounted by a small cap. By inversion and warmth of the hand a drop or more may easily be obtained without waste of material (which may be expensive), and with the additional advantage that the alkaloidal solution keeps longer, as the air does not so readily exert its influence in introducing fungus spores.—*Birmingham Medical Revue*, May, 1885.

MEDICINE.

New Experimental and Clinical Researches upon Bright's Disease.—Prof. Mariano Semmola deduces the following conclusions from the results of his latest experimental and clinical researches upon Bright's disease:

1. Albumen can traverse the renal tissue without any previous alteration in the histological elements of the kidney, and without leaving any trace of its passage.

2. If the passage of albumen be persistent, the first effect is hyperæmia with intraglomerular and intratubular hæmorrhage, and the capsule is distended in a mass after boiling, and sometimes is simply raised and separated from the glomerulus by an empty space. There is also observed considerable migration of leucocytes without any alteration of the epithelium. The urine contains hyaline cylinders. These are the first results of an inflammatory action in relation with the functional activity of the kidney.

3. If the functional process persist beyond even eight or ten days, especially with the injection of albumen in the proportion of one gramme for every thousand grammes of the animal's weight, the invading process is attended by a mild inflammatory action, in addition to a turbid swelling of the epithelium of the tubules, fatty degeneration, and thickening of the intratubular connective tissue.

This proves that the functional activity, which the kidney must sustain in the gradual and prolonged elimination of unassimilable albumen, is apt to provoke successively in different parts of the organ an inflammatory process, which, commencing in simple hyperæmia, may result finally in the establishment of interstitial nephritis. Prof. Semmola is convinced by repeating the experiments and injecting very minute quantities of albumen, in order to have the experiments well under control and preserve the life of the dog for seven or eight months, that they will result in producing the last phases of the large white kidney—that is to say, the atrophic kidney.

4. The histological alterations in the kidney persist for some time after the injection of the albumen without producing a continuation of albuminuria.

5. Along with the elimination of albumen with the urine is also observed *albuminocholia*; that is to say, the elimination of a certain quantity of albumen with the bile.

In relation with the above experiments, Prof. Semmola proposes to continue his researches on the pathology of Bright's disease with the following experiments to determine:

1. The comparative influence upon renal elimination produced by the injection of albuminose, which is presumably more assimilable, such as serum of blood, albumino-peptones, white of egg, and milk.

2. The influence of albuminous injections upon the crasis of the blood, and upon the elimination of a quantity of albumen greater than that injected.

3. The influence of albumen injections upon degree of activity in the combustion of nitrogenous matters and upon the production of urea.

4. The influence of albuminose injections upon the dyscrasic condition of the blood, and their relations with the production of anasarca.—*La Medicina Contemporanea*, June, 1885; *Med. News*, Aug. 1, 1885.

The Transmission of Phthisis Between Man and Wife.—Professor Potain has recently delivered a lecture on this subject, which is published in the *Revue de Médecine*, June 10, 1885, in which he gives some very interesting data. His first case is that of a woman 40 years of age, who died of rapid tuberculosis. She had no tuberculous antecedents, and enjoyed good health previous to her contracting the disease. She was a housemaid, and married a man who died of lung trouble after being incapable of any work for three years. During all of his sickness she had the sole care of him and the children, and three months after his death entered the hospital in a typhoid condition, dying in six days. Auscultation of the chest gave evidences of congestive pneumonia, with generalized bronchitis, but the general symptoms were such as to indicate tuberculosis, which the autopsy confirmed.

Potain reviews the subject of the old popular belief in the contagion of phthisis, as agreed to by Aristotle, Hippocrates, and Galen, and the laws in Italy, in the middle ages, which prescribed isolation for phthisical cases; then the progress of pathological anatomy gradually negatived this view until the researches of Laennec, Andral, and finally Virchow, did away entirely with the belief. In 1865 Villemin, an army surgeon, from the frequency of tuberculosis among robust young men for the most part yet living in common, and from his experiments on the subject, was the first to declare that tuberculosis was an infectious, zymotic disease; from this date we come to Klebs, in 1877, noting bacteria in the sputa of phthisical subjects, and finally Koch's well-known demonstrations in 1882.

Musgrave-Clay, in his thesis (1879), gives 111 cases of contagion. Prof. Potain considers particularly the transmission between man and wife, and refers to Bernard, 1881, who gives the case of a young girl 18 years of age, of a family free from tuberculosis, who married a man in delicate health and had no children. The man died phthisical in five years time. Three months later his widow had her first attack of hæmoptysis, a cough followed, and she died the following year. Guérin (of Nantes) reported the case of a young man who became tuberculous at about the age of 21; at 27 he married a large, strong woman, without tuberculous antecedents; they had no children. Five years later the wife died of phthisis. Buder (of Haut-Rhin) gives a similar instance. A merchant, born of a consumptive mother, who lost one brother from phthisis, married a

young girl of 17, free from any tubercular heredity. He died in 1871, and his wife in 1875. Three other cases are cited from as many authors where the wife communicates the affection to the husband, and one case where a phthisical husband, after losing a child from tuberculous meningitis, and transmitting his disease to his wife, dies of consumption. His widow marries again, dies of tuberculosis, and her second husband, in his turn, dies of tuberculosis; a sister of the wife, who took care of her, dies of the disease and her husband also dies of it. The contagion is supposed to have been transmitted successively to all of these cases of previously healthy persons, free from tuberculous antecedents, by the first husband.

That the transmission may occur in the absence of the pathological condition, a case taken from the Bulletin of the Clinical Society of London (Hermann Weber, 1874,) shows very strikingly. A sailor of tuberculous stock, and who, during adolescence, suffered from hæmoptysis, believed himself cured and married at the age of 27. His wife died after her third confinement. A year later he re-married; his second wife died within a year; a third died eight months after her second confinement; a fourth died nine months after her first confinement. During the whole of this time the man appeared to be in good health, only coughing a little and expectorating a few mucous pellets on rising in the morning. A few years later he died tuberculous.

In most of the cases cited the women who contracted phthisis by contagion had borne children; in fact pregnancy is a debilitating cause which predisposes to tubercular infection. But the transmission can take place without the intervention of pregnancy. Musgrave-Clay gives seven cases of this character.

Cases are also given in this paper to show the transmission of phthisis among others than those who are married, and where there has been no nocturnal cohabitation. It would seem, also, as if, in certain cases, that the tuberculous infection took possession of the house itself, thus perpetuating itself. M. de Lamare (1859) cites three cases of deaths of occupants, who lived necessarily in the same furnished apartment where a death occurred from phthisis, neither the furniture nor hangings being disturbed. These three occupants were in no way predisposed to tuberculosis by their antecedents, their constitutions, or their modes of life. The house having been refurnished no more cases occurred.

The phthisis of monasteries, of convents, in the army, and in crowded cities, receives in turn due consideration. But Potain lays special stress upon the danger of contagion in hospitals. Among the cases which he cites is one from Bergeret, of a soldier whose antecedents were exceptionally good, and who, entering the hospital for some slight affection, was placed between the beds of two cases of consumption. He became phthisical, and, returning to his family, contaminated successively his mother, two brothers, his father, a neighbor and her husband.

As to the mode of transmission, he thinks there is no proof to incriminate the sweat, or the expired air; but that it is due to the inhaling of the dust of the dried sputa.

SURGERY.

A WORSTED TRUSS FOR INFANTS.—MR. LUND, in his second lecture, recently delivered at the Royal College of Surgeons, referred to a form of truss which is free from many of the disadvantages inseparable from the usual form of instrument when applied to a very young patient. He said the truss, or the mechanical appliance which he should specially recommend for the relief of inguinal hernia in the infant, is certainly the worsted truss, a mode of treatment little known, he believed, but yet very simple and effective. It is described in *Ranking's Abstract* (vol. ix, p. 131). He had used it in several cases where he had been consulted on the subject of the early appearance of inguinal hernia in young infants. A skein of worsted, known as "Berlin wool," tied together, is applied around the pelvis and across the front of the abdomen. One end or loop of the worsted is placed directly over the outer abdominal ring through which the protrusion of the hernia is likely to take place; or, if the hernia has already become scrotal, it must be first reduced, and pressure made over the spot, if the child should cry or struggle much. The folded worsted is passed horizontally across the abdomen, just above the line of the crest of the pubes, to the opposite side, round the hip, behind the pelvis, and over the hip of the side of the hernia. The folded end is then passed through the loop of the skein, and will here form a knot or bulged portion, which must be carefully adjusted, so as to lie against the hernial opening; and, being carried down the upper part of the thigh, between it and the scrotum, if it be a male child, it is brought round the external side of the thigh, near to the top of the great trochanter, and there tied or fixed with a safety pin to the band of worsted already round the pelvis. With a little care, this arrangement of the worsted may be used as an excellent defence against the distension of the weak inguinal canal, and the descent of a hernia into the scrotum. It is not powerful enough, nor could it easily be kept in position, when the child is old enough to run about; but on the principle that prevention is better than cure, it is a means of relief to which we can have recourse at a very early date, certainly before we could expose the infant to the torture of an ordinary hernia truss, however weak the spring might be. It has this advantage, that the infant can be washed with the truss still in its place; a fresh one can be then applied, and the old one cleansed and used again.—*British Medical Journal*, June 13, 1885.

THE RADICAL CURE OF CANCER OF THE RECTUM.—MAURICE POLOSSON, in an article on this subject in *La Lyon Médicale*, proposes to operate for the radical cure of cancer of the rectum by first performing colotomy, and then making a secondary operation for extirpating the cancer. The preliminary operation renders the extirpation of the neoplasm more easy and less subject to subsequent complications. Polosson has tested this method in one case, making the artificial anus in the iliac region. This case recovered.—*Revue des Sciences Méd.*, July, 1885.

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THE EDITOR of this JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

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MORE SIGNS OF PROGRESS.

The leading editorial in the *Medical News* for the 15th inst. contains the following: "The action of the Original Committee—of the American Medical Association—and of the New Committee is now generally understood, and there does not seem to be much use in further comment and criticism upon what is past. The important question now is as to the future. Is there any way by which the impending disgrace can be averted? If there is, it must be such as will induce those who have withdrawn from the organization to return and co-operate heartily."

If it is true that the *News* and its limited number of eminent friends in Philadelphia, who so hastily undertook to obstruct the work of organizing the International Congress are beginning to realize their position in direct alliance with a faction in New York, whose well-known organs, the *Medical Record* and *New York Medical Journal*, have been losing no opportunity to heap obloquy upon the American Association for years, as an unnatural and uncomfortable one, it is not difficult for them to find a way out of it if they do not delay too long. If they want the Code question dropped entirely, they have only to cease agitating it, and sever their official alliance with those who openly repudiate it. None know better than the *News* and its eminent friends that, so soon as the general officers of the Preliminary Organization of the Congress and the officers of the several Sections are appointed, and the appointees accept, those general officers and the Chairmen of the Sections constitute the Executive Committee of the Congress, and the whole management of its scientific interests passes into their hands, leaving but little further for the Committee of Arrangements to do. And inasmuch as the Committee of Arrangements, at its regular meeting in Chicago, actually re-nominated the same President of the Congress, twelve out of sixteen of the same Chairmen of Sections, while the four new Chairmen of Sections and the new appointee for Secretary-General were every one of them men of the highest standing, and well known both in Europe and America, it is apparent to every candid mind that no reasonable objection could be made to the proposed leadership and *personnel* of the Organization.

In regard to the Rules for regulating the conditions of membership and the working of the Congress, it is well known that all the Rules relating to the latter were adopted by the New Committee without change. The only change of importance proposed was in Rule 1, which related to the terms of membership. The change in this rule proposed by the Committee was not satisfactory, and it is still open for further consideration and adjustment at the coming meeting of the Committee on the 3d of September. In our issue of August 8th, we gave two propositions that had been suggested for regulating the American Membership of the Congress, both of which were amply liberal—the one retaining the representative principle, and applying it to all the national special organizations, as well as to the National Association and the State and local societies in affiliation therewith; the other opening the door of the Congress, so far as its scientific proceedings and interests are concerned, to all members of the regular profession who might choose to register and take their tickets of admission. If either of these propositions is satisfactory, let the *News* say so. Or, if it will be more satisfactory to all parties, and will be accepted as a basis of adjustment to have the Rule 1 read simply as follows: "The Congress shall be composed of members of the regular medical profession who shall have inscribed their names on the register, and taken out their tickets of admission," thus making the terms of membership alike to all, American and foreign, let the *News* and its friends indicate this, and the proposition will receive a fair consideration. They cannot longer maintain their dog-in-the-manger policy on purely personal considerations without passing into history as persistent obstructionists, who place their personal prejudices above the honor and welfare of the profession to which they belong.

The 3d of September is near at hand. If those members of the profession who so abruptly abandoned the honorable and responsible positions to

which they had been assigned wish to retain those positions, and aid in maintaining the honor and interests of the profession of their country, let them move in that direction soon, or their places will be filled by others equally eminent, and the good work will move on without them. To talk of restoring the Original Committee of eight appointed by the Association at Washington, and enlarged by its own action, is simply childish. It is perfectly well known that the Original Committee appointed at Washington is now an integral part of the present Committee of Arrangements, and has no existence in any other capacity or connection. The enlargement of the Original Committee by the addition of a representa- from each State, and from the Medical Corps of the Army and Navy, instead of a less number selected from a few cities, neither lessens the efficiency nor detracts from the dignity of the Committee, as simply a Committee of Arrangements. And such Committee will proceed with its work in a true conservative liberal spirit, and will complete the preliminary organization of the Ninth International Congress on as liberal a basis, and under the official leadership of as eminent and learned men as the profession in America contains.

Our European brethren need have no fears of being met by codes or partisan questions on their arrival here. At the Copenhagen Congress they accepted an invitation to hold the next Congress at Washington in 1887, extended through a Committee appointed and commissioned by the American Medical Association, and in behalf of the profession of the United States. If they do not prematurely interfere, when the time comes they will meet with as liberal and cordial a reception, both from the representatives of the medical profession of these United States and from the highest officials of our National Government, as they have met in any of the Congresses heretofore held in Europe.

POST-PHENOMENA OF DECAPITATION.

Some time ago, Paul Bert suggested a series of experiments on recently decapitated persons, with the idea that by careful and immediate experimentation considerable light might be thrown on certain physiological problems. Physiologists in Paris have found it impossible to make these expertments on account of certain formalities which are thought to be necessary in that city when a criminal has been decapitated. MM. P. REGNARD and P. LOYE, however, have been recently, July 2, 1885, enabled to carry out the ideas of Bert to some extent in Troyes, the most careful preliminary arrangements having been previously made. Their report is to be found in *Le Progrès Médicale*, of July 18.

When the condemned man was placed on the instrument he seemed to be in a state of syncope; the mouth and eyes were widely open, and he seemed quite insensible. At the very moment that the knife severed the head from the body a general contraction of the muscles of the face was easily seen; but the horrible facial distortion which then followed was probably due more to direct excitation than to a psychical phenomenon. Within less than a mimute after the decapitation the cadaver was placed in a carriage. At this time the complete inertia of the body was quite inert; the face was composed, the features in repose, and the eyes and mouth closed. There were none of those irregular movements which many authors attribute to the bodies of decapitated persons, or which they report as occurring when certain of the lower animals are decapitated. Next the experimenters attempted to lift the body, when it was found to be in a state of complete contracture, both of the extensors and flexors; the whole body could be lifted by lifting the extremity of one limb, and it was impossible to flex the knees or thighs. The same was found to be true, to a certain extent, of the head. The eyelids, which were widely open when the knife fell, were now firmly closed; so much so that it was difficult to open them sufficiently to carry out a part of the experimentation. This state of general contracture lasted for two or three minutes (it being almost impossible to take the time with precision on account of the rolling of the carriage, which was moving very rapidly).

It has been asserted and denied that the reflexes persist after decapitation. In this case, after the cessation of the rigidity, the skin of the body was pinched and the soles of the feet were tickled without the least movement being provoked: the patellar reflex had completely disappeared. The surface of the eye was violently irritated without causing the least contraction of the lids or of the muscles of the face. Violent irritation of the cord at the point of section gave no results. The pupil, which was moderately dilated, contracted but very little on the approach of light. Thus, three minutes after decapitation, it was impossible to observe any spontaneous movement, or even a reflex; except that (very slight) of the pupil.

Having arrived at the hospital, where a room had been carefully prepared, a series of experiments was commenced on the actions of the pneumogastric nerve; the first being with reference to its action on pulmonary contractility. The experiments of Wil-

liams and Paul Bert, on dogs, show that the muscular fibres of Riessessen, disposed in a circular manner about the bronchi, are innervated by the vagi. But in the dog, it should be remembered, the pneumogastric is intimately connected with the sympathetic, so that it is very difficult to say with certainty to which of these two nerves is to be attributed the influence on the pulmonary muscles. In man, however, this connection does not exist, so that it was comparatively easy to solve this question. The pleuræ were opened so as to allow the air to enter freely, a differential water manometer was then introduced into the trachea, and firmly secured, and an induced current was then passed through the vagi. The liquid immediately commenced to ascend in the manometer, slowly at first, and followed by an equally slow descent after the current was broken. This was done thirty-two minutes after decapitation; it showed that pulmonary contractility is due to the action of the pneumogastric nerves.

At sixty minutes, after opening the thorax, one pole of the battery was placed on the surface of the lung and the other on the trachea in the mediastinum, when the pulmonary tissue was directly irritated: the fibres of Reissessen contracted, and the liquid slowly ascended in the manometer.

Forty-five minutes after decapitation the abdomen was opened: no spontaneous movements of the stomach or intestines were observed, nor were any caused by the contact of the air. On irritating the vagi there were immediate marked movements of the stomach and intestines, extending as far as the transverse colon. According to Longuet this motor action for the stomach is only produced when the stomach is full of food; but in this case the stomach was completely empty. The stomach was then opened, and the current applied to the vagi; almost immediately small drops of gastric juice began to appear over almost the whole surface of the gastric mucous membrane.

The final experiment was on the dorsal and palmar interossei, and lumbricales; it was found that their action is that which has already been assigned by Duchenne, of Boulogne.

It will be seen that these experiments were not only of great interest but of considerable physiological value. So long as decapitation is the mode of capital punishment in France, it seems that further experiments in this direction might be carried out.

THE TOXICITY OF NORMAL URINE.

The toxicity of normal urine has been a disputed question for a long period of time. The weight of evidence is on the affirmative side, although the immediate poisonous principles are not known. Urea, uric acid, kreatin, and the potassium salts have in turn been incriminated. Recent investigations, however, point to the existence of poisonous alkaloids in normal urine. M. CHAUTEMESSE has summarised the history of the subject, which is well abstracted in two leading articles, appearing in the *British Medical Journal*, June 6th and July 4th, 1885.

Alkaloids have been found in putrid albumens, bile and normal muscle-juice by Gautier and Pouchet. Brouardel and Boutmy, published in 1881, a distinguishing reaction between the vegetable alkaloids and the ptomaines. The alkaloids of putrefaction, in the presence of potassium ferricyanide and ferric chloride yield the Prussian blue coloration. In 1880, Pouchet found an alkaloidal substance in normal urine, which, in combination with hydrochloric acid, formed double salts with platinum, gold and mercury. Brouardel's discovery that "alkaloids exist in the bodies of living beings, which have been generated in the alimentary canal, and probably elaborated by the vegetable organisms there present acting as the agents in intestinal putrefactions," marks an important advance beyond the results of the labors of Selmi, Gautier, Pouchet and Boutmy. Part of these intestinal alkaloids are absorbed into the blood, further elaborated by the kidneys, and appear in the urine.

PROFESSOR BOUCHARD, at a recent meeting of the Société de Biologie, read an interesting and valuable paper on the toxic qualities of normal urine. In the light of the recent progress of physiological chemistry, briefly detailed in this paper, the results of Professor Bouchard's experiments are clearly intelligible. The fact of toxicity of the urine was established by the injection of specimens of urine into the veins of frogs and rabbits.

Following the injection of normal urine into the veins of a rabbit, Bouchard observed "contraction of pupils, slow respiration, muscular weakness, lowered temperature, abolition of reflexes, torpor," and death as the result of arrest of respiration. It is a well-known fact that 90 cubic centimètres of water for every kilogramme of its body-weight may be injected into the veins of an animal without the production of mechanical effects. In Bouchard's experiments, the quantity of fluid used was not the tenth of this amount, so that the effects were of a true toxic character.

Bouchard next attempted to determine the particular constituent, to which the poisonous character was due. Without entering into the details of the experi-

ment, it was found that urea, uric acid, kreatin, and the potassium salts, alone and combined, "though undoubtedly poisonous, were not so in the small quantities contained in the urine injected. He concludes that there are numerous poisonous principles present, which do not reside in one, but in several of the urinary constituents." The poisonous principles are not volatile.

Very recently, Lépine and Guérin have demonstrated that these alkaloidal bodies are increased in various acute diseases. Thus in typhoid fever and pneumonia, the toxicity of the urine was greatly increased, while in the urine of diabetes, catarrhal jaundice, and cirrhosis with jaundice no increase of toxicity was observed.

JOURNALISTIC CHANGES.—We have received the two first numbers of Daniel's *Texas Medical Journal*, a new monthly of 50 or 60 pages, earnestly devoted to the educational, scientific and practical interests of the medical profession in the Lone Star State. It is published in good style, on good paper and fair type, at Austin, Texas. It is both edited and published by F. E. Daniel, M.D., a man of great activity, independence of thought, and a peculiarity of expression that will always attract attention. These copies also indicate the active support of a fair number of contributors; and we trust the enterprise of our friend Daniel will be characterized by long life and abundant prosperity.

BACK NUMBERS WANTED.—Copies of Numbers 2, 6 and 16, of Vol. 1; Numbers 22, 24 and 25, of Vol. 2; Numbers 2 and 4, of Vol. 3, and Number 2, of Vol. 4, are wanted to complete files of this journal for binding. We will pay 50 cents a copy for as many of the Numbers just mentioned as may be sent to this office in a good condition, during the next 30 days.

SPECIAL ARTICLE.

THE BATTLE OF CELLS AND BACTERIA.

BY RUDOLPH VIRCHOW.

[Translated for the JOURNAL from *Virchow's Archiv*, Bd. CI, Hft. 1, by A. S. von Mansfelde, M.D., of Ashland, Neb., assisted by Alice E. Huff, M.D., of Ashland, Neb.]

Many years ago, as is well known, I formulated the proposition "Omnis cellula a cellula," as a substitute for that of Harvey, "Omne vivum ex ovo." The cellular theory of life immediately pointed to a cellular theory of disease, and my conclusions were the result of comparing the lowest plants and animals with the cells of higher plants and animals. Just at the time when I arrived at the theory of evolution, from the epigenetic conception of various pathological processes, when I put the parental propagation of cells in place of plastic substances and deposits, so-called unicellular plants and animals occupied the foreground of attention in botany and zoölogy. Much in the conception of these structures has since been changed; yet the progress of knowledge has given new and stronger proofs that the vital qualities and energies of individual cells must be compared with the vital qualities of the lowest plants and animals. The natural consequence of such a conception is the necessity of a certain *individualization of the cells*. If even the lowest plant, the lowest animal has a kind of personality, then this same quality must necessarily belong to the individual living cell of a composite organism. I will not deny that this form of contemplation may give rise to mistake, and that there is danger of deducing therefrom a new form of vitalistic mysticism. But from mistake and exaggeration no human thought is safe. A cell which nourishes itself, which, as is now said, digests, which moves, which excretes, is certainly an individual, a working, active being, and its activities are not simply products of external influences, but the products of internal processes, closely related to the continuation of life.

As much is accomplished by the least active animal cell, many accomplish much more, and therefore we must accept these elemental organisms as individualities. Such a conception is not mysticism, but pure realism. Singularly enough persons have existed who, from time to time, according as new phases in the activities of cells became known, or occupied a prominent place, with these new facts assumed the extinction of the cellular theory. Even such extraordinarily instructive and demonstrative facts as the automatic movement and the migration of cells have been conceived as invasions into the domain of the cellular theory, when instead of this, they most brilliantly confirm it. It is entirely different with the external influences which the cells experience. It is not to be denied that etiology as compared with phenomenology has a long time been somewhat neglected. This became the more apparent when the parasitic micro-organisms in constantly increasing numbers, entered into pathological consideration. Perhaps the majority of contemporaries were dazzled by it. It seemed as though they held the whole of the old wisdom as worthless. One can understand this conception even if he does not subscribe to it. But it may be well to give an explanation of how it came about that the importance even of those micro-organisms which were known was not always immediately realized. What the conception of these things was a generation ago I have shown in my article on parasitic plants in my text book of "Special Pathology and Therapy" (Erlangen, 1854, vol. i, p. 355). Since Bassi, in 1835, recognized the muscardine disease of silk worms, Schœnlein in 1839, the fungus of favus, and Julius Vogel, in 1841, the "soor" fungus, the conception that parasitic plants could give rise to specific diseases in the body has become a familiar one. Different pathologists have immediately, from

the rather scanty facts, devised a far-reaching theory of parasitic diseases. I can affirm that a prejudice against such a presumption did not exist; and in this connection I may say that I at that time published a series of, in my opinion, very careful observations on Pneumo- and Onycho-mycosis (*Virchow's Archiv*, 1856, Bd. ix, page 557, plate iv). At the commencement of this article I gave expression to the reasons why, in the 15 years since Schœnlein and Vogel, almost no progress had been made. "The astonishing slowness with which useful knowledge concerning these things is gained, in spite of the large number of investigators, is in the most part explained by the great difficulty which is experienced in settling the natural history of these plants, about which even the professional botanists have but very limited knowledge, and of which very incomplete descriptions and delineations exist. Such an investigation demands, therefore, a very greatly extended labor, and the result is very much less profitable than the cultivation of any other subject in pathology. Meanwhile we meet here a special difficulty." (Compare *Virchow's Archiv*, 1880, Bd. xxxix, page 206). So far as mould and yeast fungi are concerned, the natural history of these parasites, at least the general features, were known. Yet the whole province of those plants latterly classed under the name of schizomycetes, was not only very uncertain, but its conception had undergone such great changes that almost every one turned away from it with aversion. Ehrenberg had only a short time before described these formations as animals, and had classed them with the infusoria. Then it was discovered that all the detailed description of the finer organization of these forms by the great microscopist were erroneous, and for not a few of them it became possible to demonstrate their vegetable character. But the microscopes of that period were very imperfect; pure cultures did not succeed; the modern staining fluids were, as is conceivable, unknown, since the material for the staining of many of them, was not even discovered. Finally such little growths were found in all manner of impure and putrefying substances, giving rise to the popular notion, that every drop of water, every bubble of air contained them by the thousand. Is it a wonder that these things were overlooked, even if they were found?

In support of this I may mention my own position in regard to cholera. On July 31, and August 1, 1848, occurred the first cases of that epidemic which afterward became widespread. The first case was fatal. I found in the intestines numberless vibriones, yet in the blood no foreign elements such as vibriones. In the second case I examined the evacuations, and demonstrated the presence of vibriones and ciliated monads (*Medical Reform*, 1848, No. 5, page 28. *Gesammelten Abhandlungen aus dem Gebiete der öffentl. Medicin und Seuchenlehre*, page 128). Then I discussed also the question of the significance of infusoria and remarked that "I took no stock in the diseases caused by infusoria; and as regards cholera, such forms were found only in the evacuations and were in no way characteristic of cholera, but simply indexes to the commencement of putrefaction. The synchronous development of carbonate of ammonia and the roseate hue formed in the masses on the addition of nitric acid demonstrated this." (*Medical Reform*, No. 15, *Ges. Abhandl.*, page 137.) An especial support seemed to me to exist for this conception in the fact that the contents of the intestines in the upper part gave an acid reaction, and in the lower part were alkaline, "and here were found the infusoria of putrefaction and not above." (*Medical Reform*, 1849, *Ges. Abhandl.*, page 148). Whether these "infusoria" were identical with the comma bacillis I cannot determine; presumably some of them were present. But an accurate analysis was out of the question at that time, and as is taught by the lines quoted, out of the direction of the theoretical considerations. But the point was remembered, and when, 20 years later, a recent case of arsenical poisoning with choleraic symptoms presented itself, I examined it with reference to this very point. I hoped to find in the nature of the contents of the intestines the means of diagnosis. But the rice water contained in the large intestines showed upon microscopical examination the same composition as in cholera, especially innumerable masses of the smallest bacteria and vibriones, which were identical with the cholera fungi described by Klob and others. (*Virchow's Archiv*, 1869, Bd. xlvii, page 525.) Thus I remained for another decennium of the same opinion, only emphasizing that what was called in 1848 vibriones, is now described as micrococci or as sphero-bacteria; and I said: "Even now I am not convinced of the specific nature of these micro-organisms. (*Ges. Abhandl.*, page 513.) I refer, not to become tedious, to other parts of my "Ges. Abhandl aus dem Gebiete der öff. Medicin," Bd. ii, page 185, and particularly page 272. (Compare *Virchow's Archiv*, 1868, Bd. xlv, page 280.) In this place I said: "With the smallness of the formations under consideration, and the impossibility of distinguishing them in the present state of our knowledge—nevertheless I cannot subdue the hope that experimental investigations may yet succeed in finding a specific vibrio of cholera. I will therefore not reject the thought of the existence of a cholera fungus. *One may conceive, therefore, that the cholera miasma consists of a fungus ferment for which there are many reasons.* Yet this is still only a bare analogy, a possibility but no confirmed fact." The latest history of the comma-bacilli has taught how difficult it is, even with the improved instruments and methods of to-day, to arrive at a definite conclusion, and I think every impartial observer will find it justifiable, when I continue to advise circumspection in the hypothetic extension of the parasitic doctrine. This variation in the inclination to employ this doctrine as the explanation of all infectious diseases dates from the discovery of the bacilli of anthrax by Pollender, Davaine and Brauell (1854–57), the cocci of variola and vaccinia by Keber (1868), and the spirilla of relapsing fever by my former assistant, Obermeier (1873), as I have more precisely explained in my lecture on the progress of military medicine (*Ges. Abh.*, Bd. ii, p. 175, and in *Virchow's Archiv*, 1880, Bd.

lxxix, page 207.) With these the first valid examples of defined diseases, caused by schyomycetes, and especially the presence of the disease causing micro-organisms in the blood, were furnished, and it can be at once admitted that through these facts a sure and substantial foundation was built for the hitherto very vague hypothesis.

There is still very much to be done. For a large number, and, indeed, the most frequent, of the infective and contagious diseases, demonstration of the presence of micro-organisms is yet wanting, though they are suspected to exist. Yet this demonstration is only the first step upon the difficult road towards a knowledge of the disease processes. Many pretend not to be aware that by the bare demonstration of a bacterium or a micrococcus little is gained. Yet neither pathology nor therapy can be satisfied with it. What is the improvement in the treatment of relapsing fever because the spirillum has been found? What influence has the discovery of micrococci in the lymph and the organs had upon the doctrine of vaccination for small-pox? Had we not the successes of Pasteur in the manufacture of diverse protective vacciniæ for different infectious diseases, the only practical interest would centre in Listerism, and this, it must not be forgotten, owes its existence more to an ingenious divination than to a strictly purposive scientific investigation. Nevertheless, micro-organisms occupy the foreground of medical interest; they not only control the domain of thought, but also the dreams of many older and most young physicians. The cells seem to be forgotten. I cannot abstain from citing a few pungent sentences of a Paris journal, since they give a very spirited expression of this frame of mind: "The cellular republic has had its existence. Our body is no more a republic of cells, living each one its proper life, often dangerous, through their peculiar characteristics, and through their invading tendencies, to the body which contains them.

"This cherished republic was created by the German, Professor Virchow. Dethroned is your cellular republic, great master. She also was accused by . . . . . pathologic 'tonkinades' (and she yielded to the verdict of the parasitic fashion, 'Down with the cells!') These (the parasites) live their independent existences, infinitely small, yet prolific, with race characteristics, living within the different centres, one off the other. They come from the outside, they penetrate almost on a sudden into the organism, ravaging by the right of invasion and of conquest, without regard for parentage or alliance." —*Le Journal Médical Quotidien*, 1885, No. 61.

The cells were indeed forgotten for a time. Many a one who, through the medium of his Abbé-Zeiss apparatus, had made the cells invisible, and who perceived nothing but the colored microbes, may have really believed that the cells needed no further consideration. But they are nevertheless still existing, and to speak frankly, are, after all, the essential part. But their turn will come again when medical men shall have, in some manner, filled the gaps which are still existing in the knowledge of botany.

Perhaps this is a little too generally expressed, for, in fact, the same thing is repeated with every new parasitical cause of disease. First, the discovery of the parasite; then the investigation of its natural history; then the question, How does it cause the disease? It is only in this third stage of the affair, strictly speaking, that we return to pathology, and truly to the same pathology which had obtained previously. Nowhere is this so clearly expressed as in the history of phthisis. When Koch discovered the tubercle bacillus, many pretended that now all the toilsome labors of the past had become unnecessary —one kind of bacillus, therefore one form of phthisis. Tuberculosis of the lungs is identical with cheesy hepatization, glandular tuberculosis with scrofula, etc. This beautiful unity has not lasted very long. Phthisis of the lungs has remained what it was—a complete process, commencing in very different ways; sometimes in the mucous membrane of the air-passages, sometimes in the interior of the alveoli, and sometimes in the parenchyma of the lungs, and giving rise to entirely different products, sometimes simply inflammatory, and then specifically tuberculous ones; and whoever wants to comprehend this complex process must have learned something more than how to stain bacilli. The bacillus has advanced the comprehension of the process so little, that one has returned again, after a very short time, to the investigation of predisposition and immunity. I was engaged in this investigation a generation ago. At the meeting of the Würzburg Physico-medical Society, on February 14, 1852 (*Würzb. Ver.*, Bd. iii, page 98), I spoke of "the difference between phthisis and tuberculosis," and explained amply the phthisical predisposition. This essay is, naturally, long since forgotten, but it is curious to observe how, after the first bacillar excitement, the necessity of the case so quickly again has forced investigation into the same channel which formerly seemed to be the correct one.

In this place I desire to show that the knowledge of the bacillus, however necessary it may be for the comprehension of the origin of a disease process, nevertheless does not explain the process itself, nor does it make its special investigation unnecessary. This is still more evident in lepra. The demonstration of the bacillus lepræ has excluded a whole series of other possible explanations; but a positive progress in diagnosis, prognosis and cure of lepra will not be made until our knowledge of the local affections of lepra has been enriched with something more than the addition of a few bacilli to the lepra cells. This relation, to explain which is really the main object of the specific pathological, or more generally expressed, of the medical investigation of these forms of disease, I may call *the battle of the cells with parasitic micro-organisms*, or shorter but not quite as correct, with bacteria. Apparently two living organisms face one another, the microscopic cells, the vital elements of the body, on the one hand, the still smaller fungi, the lowest plants, on the other. Each have their own life, therefore also their own activity and their own strength. Which of them is the assailant? What is the manner of its assault? Does the one or the other resist, and through what

qualities? Which of them is destroyed? These are questions which ought to be answered. That disease is a battle is an old saying. Even Schultzenstein formulated this by saying: "Disease is a battle of life with death." At present we know little more of the character and activity of the cells than of those of the vegetable parasites. But the living reaction of the cells is studied better than the action of the parasites; and the scientific interest, therefore, will for the present lean entirely towards this subject. I defined this question more precisely in a lecture[1] before the Berlin Medical Society, on Feb. 8th, 1871. (*Berliner klin. Wochenschr*, 1871, No. 10.) Only this I wish to emphasize, that I distinguished between the effects of the foreign living body as such, and those created by its products, particularly the poisonous substances generated by it. On the other hand, the problem of the near future will be to take up, to a greater extent than has hitherto been done, the investigation of the living cells in regard to their power of resistance and the mechanism of their defense. A very promising commencement has been made by Dr. Metschnikoff in two papers (*Archiv*, 1884, Bd. xcvi, page 177, and Bd. xcvii, page 502), in which he described the reception of the parasites into the interior of the cells, and their further fate, particularly their digestion by the cells. Objections have been raised against this conception, which are entitled to attention. More particularly has the capacity for attack of the intruder as compared with the power of resistence of the cells not received merited attention. But the course taken is unquestionably the correct one. With commendable good judgment Dr. Metschnikoff has taken the initiatory step by the observation of small aquatic animals. They are studied most easily when their conditions of life, particularly their abode in the water, are least disturbed. The smallest sea animals, be they fully developed, or in their larval state, are the most convenient objects for this study, and it is to be hoped that much further study will be done in this direction.

[There exists a very strong tendency to undermine and discredit the cellular theory of body construction, and as a legitimate offspring of this, cellular pathology; so that the halt called by Professor Virchow seems very opportune to those who, like the translator, believe in this cellular theory, and applied to the utmost limit to the developmental theory, at that. It seems quite remarkable that many busy hands should already be employed in pulling down this beautiful and most useful structure of Schleiden, and Schwann, and Virchow, when a great number of the medical profession, and particularly on this continent, have not even grasped the cellular theory in its diverse applications, so that few are capable of following with full understanding the pros and cons of the question. This is substantiated again, as often before, by the paper of Dr. Elias Metschnikoff, of Odessa, to which Prof. Virchow refers. Though pregnant with the most important thoughts concerning both the cellular theory and the parasitic hypothesis, no journal in this country has as yet mentioned it (if so, it has eluded my search), though the first paper appeared in the *Archiv* in May, 1884. In these papers Dr. Metschnikoff describes his observations of a disease in the body of the Daphnia magna (Whirling-dun), caused by the presence of a yeast fungus, which he names monospora bicuspidata. The fungus propagates itself by gemnation and spore formation. The latter, the spores, are contained one at a time in its ascus, and are double-pointed, spindle-shaped, hence the name of the plant. Metschnikoff has followed all the phases of the life history of this fungus in the body of the daphnia, from its germinal inception (spore) to its death, or that of its host. And the reader who follows him carefully in his lucid descriptions is forced to conclude that he presents him with a battle for the survival of the fittest,—in this instance the fungus on the one side, the phagocytes (eating cells) on the other; now the former, now the latter, triumphant. With the victory of the fungus, the animal perishes; with the triumph of the phagocytes (white blood corpuscles and amœboid cells of the connective tissue), the animal survives. So long as the daphnia, *i. e.*, its phagocytes, retain their vigor and only spores find their way into its tissues from its alimentary canal, the white corpuscles surround and take up the spores and *digest* them, *i. e.*, kill them. But when from any cause the fungus matures and commences to form conidiæ and spore-bearing asci in the body of the daphnia, this can no longer resist its enemy and it invariably perishes.

"From this description one may perceive," says Dr. Metschnikoff, "that the infection and disease of our daphnias is a battle between living creatures, the fungi and phagocytes. The former present themselves to us as lowly organized unicellular plants; the latter, on the other hand, as the lowest tissue elements which present the greatest similarity to the simplest organisms (particularly amœbæ, rhizopodes, etc.) The phagocytes retaining their original character of intracellular food reception, act through it as the exterminators of the parasites, and appear, therefore, as representatives of the long-since known healing power of nature, which was first placed by Virchow into the tissue elements. The fundamental thought of the cellular theory of this master is fully exemplified in the history of this daphnia disease, since the main part is taken by the independent tissue elements."

He continues to form an analogy, and with good reason, between the occurrences in the disease of the daphnia and tuberculosis, and concludes: "that also in tuberculosis, against the cause of the disease, a battle of the phagocytes rages, through which the organism often for a long time resists, and, in some instances, conquers. In regard to lepra he says: "The destruction of the bacilli in the interior of the cells, which accompanies the formation of vacuolæ, points plainly towards a digesting reaction of the lepra cell. The whole description of Neisser agrees with the demonstrable side of the phenomena of intra cellular digestion as has been observed in infu-

[1] I refer those who are interested in this subject to that lecture, which was printed in my "Gessammelten Abhandlungen aus dem Gebiete der öffentlichen Medicin."

soria, rhizopoda and the cells of metozoa." Finally he says: "It is known that pus corpuscles, after the retention for some time of a body eaten by them, die; when they are taken up by another leucocyte, which devours both dead corpuscle and foreign body."

One suggestion is particularly worthy of consideration: he supposes that the successful battle of the phagocytes with the vaccination virus—a brood of weaklings prepares these scavengers of the body, the *vis medicatrix naturæ* of antiquity—to do battle with the vigorous bacilli of authrax, variola, chicken-pox, etc., enemies not enfeebled by modern methods. A rather new but not pleasing proof of the old maxim, "that practice makes perfect." The phagocytes first attack the weak bacilli of the vaccination fluids and finally war with the genuine and vigorous plants —often, but not always with success. Now this question of the cause of disease by parasitic plants must, of necessity, remain a very vague affair, as long as prominent features, concerning not the parasites, but the diseased person or organ, are entirely overlooked. For example: The modified card, issued by the committee on collective investigation of disease, within reach of Virchow himself, perpetrates the following:

Tuberculosis pulmonum.—To the questions about 1, Heredity; 2, Contagiousness; 3, Cure and 4, *Development from pneumonia.*" Under this fourth caption we read:

"4. To the development of *phthisis* from genuine pneumonia.

(c). When developed the first symptoms of *tuberculosis*, and what were they?"

What does the committee mean by this kaleidoscopic throwing together of terms? Do they pretend to say, and in the face of our overwhelming clin ical data, that tuberculosis pulmonum and phthisis pulmonum are identical terms and denote identical processes? Do they, in all seriousness, ask whether tuberculosis pulmonum ever develops from inflammation of the lung? If so, let them settle this question first before they go any farther. To those who have *studied* the writings of Virchow, Rindfleish and others, these things have become convictions—we know that it is out of the nature of things for idiopathic (croupous) pneumonia, for such is here mentioned, to change into or have developed from it—tuberculosis. Perhaps the micrococci of Friedländer change in Germany into the bacilli of Koch when required! Have not clinicians of some experience seen cases of phthisis pulmonum, *post mortem*, where with the greatest care and search no tubercles could be detected, nor during life bacilli of Koch in the sputa—could any stretch of the imagination call such a case one of tuberculosis?

Tuberculosis may be grafted on a lung, sick with catarrhal or croupous pneumonia; and indeed this seems the more probable from the researches of Dr. Metschnikoff, which also partially explain why catarrhal should be more likely to be followed by tuberculosis than the other forms of pneumonia. Of course I am not speaking of that form of so-called catarrhal pneumonia which should properly be called scrofulous, caseous or tubercular pneumonia. But this condition of things is far from being identical with the development of an infective disease from a purely inflammatory process. Again, if the inflammatory process is followed by destruction and removal of lung tissue, resulting in cavities, thus presenting the clinical picture of phthisis pulmonum, it is not related to tuberculosis, except as tuberculosis is grafted on the process, either on the initiatory one, the inflammatory; or the phthisical, the destructive terminal one. This must always take place by infection, auto-infection or otherwise with the bacillus or poison of tuberculosis. A little more histology—a little more cellular pathology—a great deal more work like that of Dr. Metschnikoff, and a little less of confusion of terms and processes, and our work will be more scientific and profitable. TRANSLATOR.]

STATE MEDICINE.

THE ILLINOIS ANATOMY ACT.

The following important law was passed by the Illinois Legislature during its recent session:

SECTION 1. WHO MAY DELIVER AND WHAT BODIES MAY BE DELIVERED FOR SCIENTIFIC STUDY, ETC. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That the superintendents of penitentiaries, houses of correction and bridewells, wardens of hospitals, insane asylums and poor houses, coroners, sheriffs, jailors, city and county undertakers, and all other State, county, town and city officers, in whose custody the body of any deceased persons, required to be buried at public expense, shall be, shall give permission to any physician or surgeon, (a licentiate of the State board of health), or any medical college or school public or private, of any city, town or county, upon his or their request therefore to receive and remove free of charge or expense, after having given proper notice to relatives or guardians of the deceased, the bodies of such deceased persons to be buried at public expense, to be by him or them used within the State, for advancement of medical science; preference being given to medical colleges or schools, public or private; said bodies to be distributed to and among the same, equitably; the number assigned to each, being in proportion to the students of each college or school: *Provided however*, that if any person claiming to be, and satisfying the proper authorities that he is of kindred to the deceased, shall ask to have the body for burial, it shall be surrendered for interment: *And provided further*, that any medical college or school, public and private, or any officers of the same, that shall receive the bodies of deceased persons for the purpose of scientific study, under the provisions of this act, shall furnish the same to students of medicine and surgery, who may be under their instruction, at a price not exceeding the sum of five dollars for each and every such deceased body so furnished.

SEC. 2. HOW BODY TO BE USED—BOND TO BE GIVEN, ETC. Any physician or surgeon, (a licentiate

of the Illinois State Board of Health) or any medical college or school, public or private, before receiving any dead body or bodies, shall give to the proper authority, surrendering the same to him or them, a sufficient bond that said body or bodies shall be used only for the promotion of medical science within this State; and whoever shall use said body or bodies for any other purpose, or shall remove the same beyond the limits of this State; and whosoever shall sell or buy any such body or bodies or shall traffic in the same, shall be deemed guilty of a misdemeanor, and shall, on conviction, be fined in a sum of not less than one hundred dollars, and be imprisoned in the county jail for a term not less than thirty days nor more than one year; the fine accruing from such conviction, to be paid into the school fund of the county where the offense shall have been committed.

SEC. 3. PENALTY FOR OFFICER REFUSING TO DELIVER BODY, ETC. Any officer refusing to deliver the remains or body of any deceased person when demanded in accordance with the provisions of this act, shall pay a penalty of not less than fifty dollars, nor more than one hundred dollars for the first offense, and for the second offense, a penalty of not less than one hundred dollars, nor more than five hundred dollars; and for a third offense, or any offense thereafter, the penalty of not less than five hundred dollars, or to be imprisoned in the county jail not less than six nor more than twelve months, or both at the discretion of the court; such penalties to be sued for by the health department, as the case may be.

SEC. 4. DUTY OF PROFESSORS, ETC., TO BURY BODIES, ETC. It shall be the duty of preceptors, professors and teachers, and all officers of medical colleges or schools, public or private, who shall receive any dead body or bodies, in pursuance of the provisions of this act, decently to bury, in some public cemetery, or to cremate the same in a furnace properly constructed for that purpose, the remains of all bodies, after they shall have answered the purpose of study aforesaid, and for any neglect or violations of the provisions of this act, the party or parties so neglecting, shall on conviction, forfeit or pay a penalty of not less than fifty dollars, nor more than one hundred dollars, or to be imprisoned in the county jail not less than six, nor more than twelve months, or both, at the discretion of the court; such penalties to be sued for by school officers, or any person interested therein, for the benefit of the school fund of the county in which the offense shall have been committed.

SEC. 5. REPEAL. An act entitled "An act to promote the science of medicine and surgery in the State of Illinois," approved February 16, 1874, in force July 1, 1874, is hereby repealed.

FOREIGN CORRESPONDENCE.

LETTER FROM BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Rag Disinfection—Laparotomy for Rupture of the Uterus—Hay Bacillus and Bacillus Anthracis.

Some weeks ago, without the least knowledge on my part that such an appointment was contemplated, and without any definite conception of the regulations of the Treasury Department governing the exportation from Germany to the United States of old rags, I was requested by the Consul-General to assume the duties of inspector. The circular issued by the Hon. H. McCulloch, Dec. 22, 1884, prescribed the following processes, either of which will be considered a satisfactory method of disinfection of old rags, and will entitle them to entry and to be landed in the United States upon the usual permit of the local health officer, viz.:

1. Boiling in water for two hours under a pressure of fifty pounds per square inch. 2. Boiling in water for four hours without pressure. 3. Subjection to the action of confined sulphurous acid gas for six hours, burning one and a half or two pounds of roll brimstone in each 1,000 cubic feet of space, with the rags well scattered upon racks. 4. Disinfection in the bale by the means of perforated screws or tubes, through which sulphur dioxide, or super heated steam at a temperature of not less than 330° F., shall be forced under a pressure of four atmospheres for such a period as is sufficient to insure thorough disinfection.

The chief baling and shipping stations in North Germany are Königsberg, Dantzig, Stetten, Riesa, Berlin, Hanover, Harburg and Hamburg. The chief firms controlling this business are Lewy Gebrüder, of Königsberg and Berlin; Lewy and Strich, of Königsberg and Berlin; Gebrüder Salomon, of Hanover and Harburg, and Wertheim, of Hamburg. This latter gentleman is agent for Germany of a patent disinfecting arrangement erected in New York Harbor, which, so far, meets with little favor. Merchants here will not ship rags to be disinfected in New York, because, among other reasons, of the greater expense, so the company endeavors to force patronage by untruthful statements of foreign inspection, or by sensational reports of the rapid advance of cholera. The rags shipped from these ports are all North of Germany or Russian rags, quite clean and free from infection. In their disinfection they lose their dust, which is a gain to hygiene, though a loss to the merchants, as it reduces the weight. There has not been a case of cholera in this region of country for over eight years, and there have been but very few instances of malignant dysentery. Every year, from North Germany alone, there are shipped to the United States about one hundred thousand bales of rags.

The sulphur process is in favor here. In Berlin, Hanover and Harburg I have made use of the following plan: A large room in the warehouse is set apart as a disinfecting room. In the centre is a well of fireproof stone resting on a floor of the same material about six feet square, the sides being four feet high. In the middle is a large graphite pot for the sulphur, and the whole is covered over with an iron grating. The windows and doors are all tightly closed. The rags are scattered about on the floor and racks, and are kept in the fumes for five hours. In the ceiling is a large ventilator, which is opened from the outside by a string and pulley.

This is opened at the expiration of the disinfection. In Königsberg I utilized an old sugar house with a chimney 120 feet high. There was one large room where the rags were scattered about, and a small room adjoining, in which a special furnace of brick was built for the burning of sulphur. Four large tubes perforated the partition between the two rooms, through which the fumes of the sulphur are blown. This is a very practical and safe arrangement. The large chimney was used as a ventilator. About seventy pounds of sulphur every day are consumed by each of the two firms exporting from Königsberg. Working full force, and keeping late hours, each firm in Königsberg, if pressed, could disinfect and press nearly 300 bales per diem. In this city more rags are baled and shipped than from any other port in Germany—perhaps from any other two cities. The business here is almost entirely controlled by Lewy Gebrüder and Lewy and Strich. Berlin does but a small business, averaging, perhaps, forty bales per diem. If the market were active, the same two firms, who also control the business here, could bale about 150 bales each per diem. Since my appointment the Berlin firms have only disinfected about 2,700 bales, burning on the average fifty pounds of sulphur for each twenty or twenty-five bales, and disinfecting sometimes twice in the day. In Hanover and Harburg the Gebrüder Salomon have extensive facilities, and, if necessary, could bale in the two places about 350 to 500 bales per diem. I have inspected about 700 bales from each of these cities.

Now the question naturally arises—How is it possible for one inspector to give his personal attention to places so widely separated from each other? The answer is a simple one. At no one city is the business constant. It is always intermittent. Little is done at Berlin, and that irregularly. At Königsberg it is also spasmodic. While disinfection is going on in Berlin I stop it at Königsberg. By special permission of the Consul-General, and as a favor to the merchants, I went to Hanover and Harburg. The quantities here being small, we finished rapidly by working full force and long hours. I do not suppose that any scientific man claims that the sulphur process has any effect as a germicide upon the bacillus of Koch. Bacilli are killed by drying, but it is necessary to bear in mind that they must be exposed to the drying process in thin layers. At the temperature of boiling water they are invariably killed, but not *their spores*. Even heating them from half an hour to several hours at a temperature of 55° or 60° C. kills them, but not their spores. Freezing has no effect upon the spores. "The spores represent the seeds, capable of retaining life, and of germinating into bacilli, even after what would appear the most damaging influences (that is, damaging to all other kinds of organisms, and to the bacilli themselves), such as long lapses of time, drying, heat, cold, chemical reagents, etc. Spores retain the power to germinate into bacilli after the lapse of long periods, and there is no reason to assume that these periods have any limits; it makes no difference whether they are kept dry or in the mother liquid. The great resistance of spores to low or high temperatures, to acids or other substances, is due to this, that the substance of each spore is enveloped in a double sheath—an internal sheath, probably of a fatty nature, and an external one, probably of cellulose. Both are bad conductors of heat."—(Klein.)

While it is undoubtedly true, then, that disinfection is valueless as a preventive of cholera, it is equally true that its value as a hygienic measure may not be overestimated. All rags coming to the United States for the next few years should be disinfected, because this process does act as a germicide in the micro-organisms of typhoid (?)—probably this is not a specific organism, but a migratory one from the degenerated intestine—small-pox, diarrhœa, dysentery, etc., and just in proportion as the disinfection is thoroughly done, so much the better will the health of our entrepôts be. But why this anxiety about cholera? Even in Spain the disease has assumed but small proportions, and Spain is many miles removed from Berlin. The health of North Germany is perfect, and if it be true that rags may convey the potent cholera bacillus, it seems strange that the many hundreds of men, women and children who are engaged here in assorting, baling, and arranging, who daily respire for many hours the "rag" atmosphere, and whose bodies are in a ripe condition for infection, never show any symptoms of the disease. It is natural to suppose that the first evidence of rag infection would be manifested in the persons of those here in Germany who are engaged in handling them. Does the bacillus (or the spores thereof) carry a potency for cholera within its microscopic envelope?

I lately saw a laparotomy for rupture of the uterus, which was successful in regard to the mother. The operation was done, and very properly done, about two hours after the accident. The abdominal cavity, the uterine cavity and vagina were thoroughly washed out with warm carbolized water, the stream being kept up for ten or fifteen minutes. The intestines were thoroughly cleansed, and drainage established *through the vagina*. The rent in the uterus was sewn up, and the abdominal wound closed. The danger in these cases is not from the operation itself, which is not any more difficult or hazardous than many similar abdominal sections for uterine tumors. Indeed, it is not in itself as severe as a supra-vaginal hysterectomy. The mischief has already been done by the rending of the uterine tissue. The nervous system has received a profound shock, which is exaggerated as the hæmorrhage continues. An immediate operation is the only hope. The dangers are all tenfold intensified by waiting. Adventitious sacs will form; plastic adhesions will prove troublesome, and the system generally will appreciate the septic changes engendered by the decomposing mass within the abdomen. A late operation can *never* result favorably; all the pathological changes are against it. If seen early enough, even though the fœtus may have escaped *per vias naturales*, laparotomy is the best safeguard against septicæmia The diagnosis of an impending rupture of the uterus is

fraught with such immense difficulty, and seems to be so illogical, that it seems difficult to believe it is ever made. Lusk asserts that it can be foreshadowed, and in some instances prevented. This is a refinement of diagnosis not as yet reached by German obstetricians, and not admitted by German writers.

Leopold is having some good results from Saenger's method of Cæsarian section, and prefers this conservative plan to the Porro-Müller. He has had three cases, all of them successful.

Dr. Hans Buchner ("Ueber die Experimentale Erzeugung des Milzbrandcontagiums, etc.") says that he has succeeded in transforming the common bacillus of hay infusion, the hay bacillus, into the anthrax bacillus, and that he has done this by successive cultivation of bacillus anthracis under *constant variation of the nutritive material.* Morphologically considered, both of these forms come under the head of Cohn's bacillus subtilis. Lately I have gone very carefully through all of Buchner's work, but I have entirely failed to reproduce his results. The bacillus anthracis is non-motile. Ewart's assertion that they became motile is not borne out by more elaborate experiments. Koch regards Buchner's statements that successive cultivations of the bacillus anthracis at 35° to 37° assumes the morphological and physiological characteristics of hay bacillus as a complete error. It will be a serious matter for the animal kingdom if Buchner's opinions shall be substantiated by other observers. H. R. B.

DOMESTIC CORRESPONDENCE

EPIDEMIC DYSENTERY AT PORTER, INDIANA.

EDITOR JOURNAL AMERICAN MEDICAL ASSOCIATION:

Dear Sir:—In as much as I have many cases under treatment at Porter, Indiana, I deem it expedient to give you my observation of the existing epidemic. The malady raging is *epidemic dysentery.* Since Aug. 3, I have had, at Porter, 28 cases of dysentery under my care. Two of these cases, Mrs. Theo. B——, aged 20 years, and Peter S——, aged 14 years, are of a typhoid type,—prognosis doubtful; the other cases, 26 in number, are improving.

A rumor has gained currency that the epidemic at Porter was caused by the eating of diseased meat, purchased of a certain butcher of Chesterton, Indiana. Of the 28 cases under my care, not one had eaten meat purchased from said butcher; and in many instances, no meat had been eaten for several weeks.

Porter, Indiana, is situated on a low flat tract of land, and is not blessed with any kind of sewerage or drainage. Ditches run parallel with the sidewalks of the several thoroughfares,—these ditches have no outlet. The main alley of the town is a mass of garbage and filth; the majority of the privies along this alley are overflowing. As a rule, the well in each yard is from 10 to 20 feet from the alley and privy. The floors of the houses set on the damp ground and, in many instances, six to eight people are crowded into two or three rooms.

For three weeks previous to Aug. 1, Porter had been subjected to sudden vicissitudes of temperature from a high to a low range; for the seven days previous to Aug. 1, the climate resembled a tropical one, and was followed by a heavy, drenching rain of 24 hours duration, making a fall of about 4½ to 5 inches of water. The lack of the proper sewerage and drainage; the bad sanitary condition of the town; the continued high temperature, followed by a heavy rain-fall; the swampy country; the damp and cold crowded houses; the polluted well water; the noxious air;—all were conducive to miasmatic diseases of the dysenteric type. After a thorough investigation, I have failed to trace a single one of my 28 cases to tainted meat. Yours truly,

ALEX. J. MULLEN, JR., M.D.

Michigan City, August 10, 1885.

BOOK REVIEWS.

A SYSTEM OF PRACTICAL MEDICINE. BY AMERICAN AUTHORS. EDITED BY WILLIAM PEPPER, M. D., LL. D., etc. Assisted by LOUIS STARR, M. D., etc. Volume II. General Diseases (continued) and Diseases of the Digestive System. Philadelphia: Lea Brothers & Co., 1885.

What was said of the general character of this work, in the notice of the first volume, need not be repeated here. Indeed, in order to show the value of the second volume, it is scarcely necessary to do more than give a list of the various subjects treated of, with the names of the writers.

The first 254 pages of the work are what may be called a continuation of the first volume, on General Diseases. The volume opens with an article on Rheumatism, by Prof. Howard, of McGill University, and is followed by one on Gout, by Dr. W. H. Draper. The other articles on general diseases are: Rachitis, by A. Jacobi; Scurvy, by Philip S. Wales; Purpura, by I. Edmondson Atkinson; Diabetes Mellitus, by James Tyson; Scrofula, by John S Lynch; and Hereditary Syphilis, by J. William White. With such an array of most excellent articles by thoroughly competent writers it is difficult to select one or two that seem worthy of special mention. Those on Diabetes and Hereditary Syphilis, however, seem more worthy of special mention, if any are. Professor Tyson's article, though occupying only thirty-six pages, seems to leave nothing unsaid that could possibly be of benefit to the practitioner who has under his care a case of diabetes; and it is especially valuable for the remarks on the tests for sugar and the bill of fare for diabetics. The writer is deservedly known for his thorough urological work, and the diet table for diabetics is alone worth the price of the work.

Dr. J. William White discusses the subject Hereditary Syphilis in 64 pages, with an array of references that is marvelous as regards completeness, there being not less than two hundred and ten. Of the article itself it need scarcely be said that it is as complete as an article on this subject could possibly be.

In the second part of the book, on Diseases of the Digestive System, are thirty articles. Those

on Diseases of the Mouth and Tongue, of the Tonsils, of the Pharynx, and of the Œsophagus are by Dr. J. Solis Cohen. Dr. Samuel G. Armor writes on Functional and Inflammatory Diseases of the Stomach; Professor W. H. Welch on Simple Ulcer of the Stomach, Cancer of the Stomach, Hemorrhage from the Stomach, Dilatation of the Stomach, and Minor Organic Affections of the Stomach (including Cirrhosis; Hypertrophic Stenosis of Pylorus; Atrophy; Anomalies in the Form and Position of the Stomach; Rupture; Gastro-malacia). The six articles on Intestinal Indigestion, Constipation, Enteralgia, Acute Intestinal Catarrh, and Cholera Morbus are by Prof. W. W. Johnston, of Washington. Dr. J. Lewis Smith contributes the article on Intestinal Affections of Children in Hot Weather; Dr. Philip S. Wales that on Pseudo-membranous Enteritis; and Professor James T Whittaker those on Dysentery, Typhlitis, Perityphlitis and Paratyphlitis, Intestinal Ulcer, and Hemorrhage of the Bowels. The article on Intestinal Obstruction is by Dr. Hunter McGuire; on Cancer and Lardaceous Degeneration of the Intestines by Dr. Edmondson Atkinson; and that on Diseases of the Rectum and Anus by Drs. Thomas C. Morton and Henry M. Wetherill. Profesosr Leidy contributes that on Intestinal Worms; Professor Roberts Bartholow that on Diseases of the Liver; and the Assistant Editor that on Diseases of the Pancreas. The long and very valuable article on Peritonitis by Prof. Alonzo Clark will be read with more than ordinary interest, especially by those who have, for many years past, listened to his lectures on this subject. The concluding article, Diseases of the Abdominal Glands (Tabes Mesenterica), is by Dr. Samuel C. Busey

We see no reason to do otherwise than reiterate the very favorable opinion expressed of this work when the first volume was noticed in the JOURNAL. The work is in the highest sense American; a careful reading of the articles will show that authors have attempted to say what was necessary in the fewest words without being unduly terse. Certainly in the two volumes that have thus far appeared there is nothing of that tiresome verbosity and wandering from the subject that is so common in similar works from the Continent of Europe. The index—one hundred and eighteen pages—seems to be quite complete.

ASSOCIATION ITEMS.

MEMBERSHIP BY APPLICATION.

At the meeting of the American Medical Association held at Washington, in May, 1884, an amendment to Regulation II was adopted, which provides that membership in the Association shall be obtainable by any member of a State or County Medical Society recognized by the Association, upon application endorsed by the President and Secretary of said Society; and shall be retained so long as he shall remain in good standing in his local Society, and shall pay his annual dues to the Association. Hitherto attendance as a delegate at an annual meeting has been necessary in order to obtain such membership.

Application for membership, accompanied with FIVE DOLLARS, for annual dues, and the Certificate of Membership in the local Society, should be sent directly to the undersigned, on receipt of which the weekly JOURNAL OF THE ASSOCIATION will be forwarded for one year.

RICHARD J. DUNGLISON, M.D., *Treasurer.*
Lock Box 1274, Philadelphia, Pa.

MISCELLANEOUS.

STATE MEDICAL SOCIETY OF VIRGINIA.—The Medical Society of Virginia, will convene at Alleghany Springs, Montgomery Co., Virginia, on Tuesday, September 15. The Fellows and Delegates will be guests of the Alleghany Springs Management. Liberal rates have been offered by the railroads of the State, and a large attendance is expected. The programme of the meeting will be more fully detailed in a subsequent issue of the JOURNAL.

THE MISSISSIPPI VALLEY MEDICAL SOCIETY will meet at Evansville, Ind., on September 8, 9, and 10, 1885. Railroads will return those attending at one-third rates. Hotels, $1.50 to $2.00 per day. This was formerly the Tri-State Medical Society. For further particulars address Dr. A. M. Owen, Evansville, Indiana.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM AUGUST 8, 1885, TO AUGUST 14, 1885.

Capt. Thos F. Ayfull, Asst. Surgeon, retired from active service Aug. 10, 1885. (S. O. 181, A. G. O. Aug. 10, 1885.)

First Lt. A. R. Chapin, Asst. Surgeon, granted one month's leave, to take effect when services can be spared by Comd'g Gen'l Dept. Mo., with permission to apply for one month's extension. (S. O. 179, A. G. O. Aug. 6, 1885.)

First Lt. Philip G. Wales, Asst. Surgeon (Ft. Couer d'Alene, Idaho), ordered for temporary duty at Boise Barracks, Idaho. (S. O. 130, Dept. Colo., Aug. 1, 1885.)

APPOINTMENT.

William P. Kendall, to be Asst. Surgeon U. S. Army, with the rank of First Lieutenant, to date from Aug. 12, 1885.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY, DURING THE WEEK ENDING AUGUST 15, 1885.

Beyer, H. G., Passed Asst. Surgeon. To attend the meeting of the "American Association for the Advancement of Sciences," at Ann Arbor, Mich, and at conclusion of meeting to resume duty at the Smithsonian Institute.

Boyd, John C., Passed Asst. Su.geon. From Navy Yard, at Washington, D. C., to special duty at Bureau of Medicine and Surgery, Washington, Navy Department.

Lippincott, J. C., Passed Asst. Surgeon. To Navy Yard, at Washington, D. C., as relief of Passed Asst. Surg. Boyd.

Owens, Thomas, Asst. Surgeon. From special duty at Bureau of Medicine and Surgery, Navy Dep't, and waiting orders.

Sayre, J. S., Asst. Surgeon. From U. S. R. S. "Independence" to Naval Hospital, Mare Island, Cal.